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ABSTRACT

Articles in this special issue include the following: "ICT and Modern Foreign Languages: Learning Opportunities and Training Needs" (Graham Davies); "Authoring, Pedagogy and the Web: Expectations Versus Reality" (Paul Bangs); "Web-based Instructional Environments: Tools and Techniques for Effective Second Language Acquisition" (Esperanza Roman); "From Rooms to Environments: Techno-Short-Sightedness and Language Laboratories" (Pascual Perez); "Web Assisted Language Learning (WALL) and Learning Management Systems (LMS) in Virtual Centres for Foreign Languages" (German Ruiperez); "Improving the Virtual Learning Development Processes Using XML Standards" (Kurt Suss and Thomas Oberhofer); "Principles in Call Software Design and Implementation" (Ana Gimeno); "Integrating Corpus-based Resources and Natural Language Processing Tools into CALL (Pascual Cantos); "Tele-enREDando.com: A Multimedia WEB-CALL Software for Mobile Phones" (Jose Carlos Garcia); "A Minimalist Approach to Multi-level IT-Human Integration in Translation Work" (Jesus Soria); "OE CAI: Computer-Assisted Instruction of Old English" (Alejandro Alcaraz); and "New Technologies and Genre Variation. Printed and Electronic Documents in Tertiary Education ESP Courses" (Piedad Fernandez). (VWL)

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New Trends in Computer Assisted Language Learning and Teaching

Editors:
Pascual Pérez-Paredes & Pascual Cantos-Gómez

Introduction by Bernd Rüschoff

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Preface

Computer Assisted Language Learning (CALL) has come of age. And it has in an impressive, staggering way during the last five years.

Not only has the number of computers and CALL applications increased in academic institutions, but also the computer as a *technology* has attracted the attention and, relevantly, the money, of individual consumers worldwide, all of them potential learners of foreign languages. Using Cameron's words (1999b:1) CALL has turned into "youthful confidence". If a technology grows mature when it is *visible*, now the risk is that computer-related communication and technology may blind the CALL arena so that eventually it becomes mere soil for fruitless innovation, a place for the latest fad in language teaching.

However, research and academic attention to CALL has initiated a seamlessly effort to invest the discipline with practices which are commonplace in other areas of Foreign Language Teaching (FLT). Recent scholarly monographs have laid stress on different aspects of CALL. Debski and Levy (eds.) (1999) have advocated a holistic, macro view approach whereas Cameron (ed.) (1999a) has compiled contributions which reflect a concern for learning and integration into mainstream educational institutions. Egbert and Hanson-Smith (ed.) (1999) have attempted to develop a theoretical basis for CALL where the role of the learning environment becomes paramount and Cameron (1999b) have underpinned the need for sound design principles.

The vision of CALL advocated in this monograph is, continuing with the analogy above, mature in different ways. Underlying the discussions herein, pedagogy drives technology, rather than the opposite. This definitely places the ball again in the pitch of mainstream FLT.

This monograph of IJES starts with a lucid introduction of CALL by Prof. **Rüschoff**. The papers are divided into four main sections. In the first, *State of the Art*, Prof. **Davies** and Prof **Bangs**, discuss central issues which are paramount in CALL by presenting a comprehensive overview of problems such as teacher training and authoring with a focus on the role of teachers in dealing with CALL applications. A second part of the monograph, *The Internet and Language Laboratories*, offers an account of existing technologies. Dr. **Román**, Prof. **Ruipérez** and Dr. **Pérez-Paredes** shows an interest in the role of technology in FLT. A third part of this volume, *Software,* is concerned with different software applications, mainly from a general, overview perspective ranging from programming standards, Dr. **Gimeno** and Prof. **Süss** and Dr. **Oberhofer**, to Natural Language Application Tools, Dr. **Cantos**, and closing with the latest e-mobile phone standards applicable to CALL by **José Carlos Cabrero**. The last section, *Language Learning Applications,* is devoted to different CALL experiences, **Jesús Soria**, Dr. **Alcaraz** and Dr. **Fernández**. All in all, the contributions herein present a comprehensive survey of current trends in Technology-Enhanced Language Learning.

We would like to thank the contributors, the readers and very specially Prof. **Rüschoff** for the high academic standard of their research and work.

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Introduction: New Trends in CALL. New Technologies and Language Learning Seen in Perspective

New technologies have become the predominant influence on the way we live and work at the beginning of the new millennium. Some view the changes effected by global networks and information technologies with some apprehension. Others consider the innovative potential of world wide co-operation via e-mail and internet as well as unprohibited access to information and digital resources by means of telecommunications and other forms of electronic publication to be of benefit for both the professional and the educational world. Our society, which has now become what is best described by the term knowledge society, is undergoing tremendous changes. Such changes are linked with challenges which need to be met not just by business and industry but even more so by educational institutions at all levels. As new technologies are nowadays used as tools in almost all trades, they also need to be exploited as learning tools in order to initiate changes in the way we teach and learn. A principled approach is needed in order to translate the potential of new technologies into new methodological approaches and changing organisational frameworks for the learning and acquisition of any subject. This is true even more for the learning of foreign languages, as language competencies and intercultural skills will more than ever be part of the key qualifications needed to live and work in the knowledge society.

The monograph issue of the IJES on New Trends in CALL is an important contribution to the necessary process of reflecting on past expectations, considering more recent developments, and of evaluating the real potential for innovation through new technologies in language learning, and of defining future courses of action. As far as language learning methodology in general is concerned, the debate somewhat kicked off by the advent of new technologies has led to the assumption that the traditional skills of information gathering and storing as well as the mere learning of facts will no longer be sufficient in order to live, work, and learn in the coming centuries. Consequently, the ultimate aim of teaching and learning is now seen as that of assisting learners in their need to develop strategies of knowledge processing. Therefore, quite a number of colleagues in the field accept the need to replace the traditional transmission model of learning with models which emphasise information processing and knowledge construction as acts of learning most suited for the acquisition of the kind of skills needed for the knowledge society. Education and teaching in the knowledge society can no longer be reduced to "*the act, process, or art of imparting knowledge and skill*" as Roget's Thesaurus proposes, but learning must be recognised as an act in which a learner plays the role of an active constructor of knowledge. Criteria based on such principles need to be considered when evaluating the effectiveness and value of technology enhanced materials for language learning.

However, as some of the papers in the current monograph issue indicate, very often new technologies have not been able to live up to this kind of expectation, as many of the innovative and flexible learning opportunities offered by ICT have not yet been fully exploited. This is not only due to the fact that a large number of the software produced for CALL is still predominantly of the more traditional learnware type rather than the learning tool kind needed for real change. As Graham Davies points out, this is also due to a lack of teacher training. However, the example presented in his paper, i.e. the ICT4LT website consisting of technology related training materials for language teachers very much reflects one of the more recent effects of new technologies. This trend concerns more flexible and action research based approaches to teacher training. Very much stimulated by the fact that new technologies have led to a demand for more and better ways of teacher training, current principles of teacher training place an emphasis on a process-oriented approach where teachers are encouraged to continuously reflect and improve on their teaching practices. Such an on-going process may involve taking part in in-service training courses, carrying out action research in classrooms or engaging in collaborative discussions and projects with other teachers in both virtual and face-to-face environments. These activities reflect an attitude that on-going teacher development is a vital part of a good professional's life and that such development clearly marks the difference between teachers "...with twenty years' experience and those with one year's experience repeated twenty times (Ur, 1996:317)". With regard to this, distance courses and training opportunities, such as those offered by Johnson et. al. (2001) as well as the ICT4LT website, offer virtual components which allow teachers to benefit from the tutoring and interaction of an in-service course without it being necessary to travel long distances.

Apart from in-service training, teachers have been encouraged to adopt more reflective and critical approaches to their work by the introduction of action research procedures. In action research teachers reflect on a certain aspect of their teaching by collecting data from their classroom — either by keeping a journal, recording classes, distributing questionnaires or interviewing students — and then, based on the results of this research, make decisions about how their future teaching practices should be adapted (Van Lier, 1996; Wallace, 1998). This is where some of the more recent European projects — apart from the ICT4LT project one should perhaps mention the *GEH-MIT* project as well as the TALLENT initiative — fit in perfectly with current lines of though in teacher training, as such project plans to "... structure its curricula as to develop the teachers' abilities to use computers in everyday teaching, and to design and evaluate didactic plans that make use of the computer as a tool in actual classroom environments". The planned integration of an action research oriented approach also becomes evident from the fact that "teachers will be asked to introduce a selected sample to their classrooms according to specific lesson plans and evaluate them. Furthermore teachers will be asked to prepare their lesson plans in different cases". This tendency for teachers to be more reflective about their approach to teaching has increased the need for greater collaboration and interaction between teachers about their profession and their own personal experiences, and this is certainly one of the trends which will greatly benefit from the possibilities offered by new technologies.

Another aspect is, of course, the creation of more flexible learning environments which require equally flexible and well-designed technology enhanced materials for language learning. This is an issue addressed by Paul Bangs, Esperanza Román, Germán Ruipérez and Pascual Pérez-Paredes in their papers. While Pérez-Paredes considers the lessons to be learnt from that technology enhanced learning environment of the very first generation, i.e. the language laboratory, Bangs , Román and Ruipérez discuss web-based learning opportunities and the kind of authoring tools which allow individual teachers as well as institutions to create sound learning materials. It is, however, extremely important to exploit such tools in a way which results in more than mere remedial exercises dealing with grammar or vocabulary. After all, research into the processes of language learning and acquisition suggests that mere training in structural (grammatical) and vocabulary knowledge will not result in real linguistic competence and language proficiency. However, apart from basic communicative competences as well as linguistic competences and skills in the traditional sense often favoured in the communicative classroom of the 80s, strategies of language processing and learning competence as well as language awareness are regarded as an essential part of the overall aims of any language curriculum. This is why both pedagogical principles and instructional or, as I would prefer to label it, exploratory designs need to be considered very carefully. Such principles of software design and software implementation are being discussed in greater detail in Ana Gimeno Sanz's contribution to the present monograph issue.

How do CALL software and other technology enhanced learning tools then fit into the more recent ideas put forward with regard to the basic principles of a (possibly technology enhanced) learning environment? As far as the integration into the actual (real) classroom rather that the virtual learning environment is concerned, Jesús Soria proposes an article which "attempts to define the intimate relationship that is intended between classroom-based and laboratory-based activities, between private study and language class, between individual and collective effort, and between computer-centred and teacher-led learning". As one of the briefs when asked to contribute an introductory text to this issue was to comment on new trends in the field, this seems to be the appropriate part of the text to put forward a few ideas as to how (at least in metaphorical terms) the flexible and rich learning environment need for such an approach should be designed. As far as a rich learning environment is concerned, Legutke put forward six metaphors for how a language classroom could best be defined exploited in a more fruitful way.

Basically, his metaphors — *project room, workshop, training centre, observatory, communication centre*, and *teaching centre* — call for more flexibility both in the arrangement of learning scenarios and in the way teachers organise their classroom, and they also provide points of reference as to where and how technology enhanced tools could be of real benefit for language learning. In short, they could be described as follows:

- both ***project room*** and ***workshop*** represent the concept that process-based and product-oriented activities are an integral part of language learning. This means that task-based projects with a clear focus on knowledge construction and a presentable outcome (product) need to become part of language classroom activities more than in the past;
- learning, practice, and revision based on innovative materials and interactive tutorials are very important to successful learning processes. This is the basic background of the ***training centre*** metaphor. Consequently, classroom management and lesson planning need to consider successful ways of providing learners with meaningful tasks;
- the ***observatory*** metaphors addresses the need for more authenticity both in task and content in language learning. Learners need to be given the opportunity to get more exposure to real-life language use, and tasks need to be defined which enable learner to interact with authentic language and reflect on authentic contexts of the use of the target language in ways meaningful and supportive to heir learning;
- communication and activities stimulating communicative activities in the language classroom are of vital importance. This fact is acknowledged by the ***communication centre*** metaphor. As far as new technologies are concerned, telecommunications now offer an opportunity to place learners in a position where they can communicate and exchange views with partners beyond the walls of their classroom;
- the ***teaching centre*** metaphor emphasises the fact that an integration of the different types of activities hinted at in this brief definition of a modern language classroom requires a well-defined and well-designed curriculum. This also suggests that the role of both teachers and learners need to be reconsidered. The best way to describe this — apart from citing the usual labels such as the teacher as a moderator & facilitator — might be to stress the need for a kind of learning partnership between teacher and learner based on clearly defined rules and learning scenarios.

It is obviously beyond the scope of this introductory text to provide ICT-based examples for all of the above metaphors, but let me briefly relate the remaining papers of the present monograph to them.

It is evident that the internet as well as virtual learning environments in general are of extreme importance in this context. This aspect, particularly the design of distributed learning environments, is discussed in more technical terms in Kurt Süss and Thomas Oberdorfer's paper. When considering the observatory metaphor as well as the project room and workshop idea presented above, natural language processing tools and data-driven learning play an important role. This aspect is discussed in Pascal Cantos-Gómez paper. Project-based and observation-oriented learning scenarios are very much part of data-driven learning, where learners are, for example, encouraged to research "a word by the company it keeps" (Firth, 1957). When it comes to finding innovative examples of the use of new technologies in language learning, any tool that allows for the creation of discovery-based and exploratory, observation-oriented learning materials must rank very highly within a typology of TELL software. One such tool is concordancing software, originally developed as a device to assist research in corpus linguistics. Concordances used to compile context lists and to offer additional insight into the meaning of words, to experience the company words keep, and to gain full insight into difficult structures are one way of opening an observatory. Grammatical rules can be acquired in such a discovery-based or exploratory mode, e.g. on the basis of lists with concordances of adverbs, offering learners the opportunity to discover rather than to be taught a rule concerning adverbs and word order in English sentences. Tim Johns provides a complete website with samples and links on data-driven learning. In addition, Chris Tribble (1997) has published an interesting manual on *Using Concordances in the Classroom*. Similarly, the exploitation of printed and electronic documents and other authentic materials in language learning fits into the observatory and project-room/workshop metaphors referred to above, but is of equal value to most of the other aspects of a technology-enriched learning environment. This aspect is addressed in Piedad Fernández Toledo's paper. The creative implementation of a teaching and training centre is exemplified by Alejandro Alcaraz Sintas's paper on Computer Assisted Instruction of Old English. Finally, José Carlos Cabrero points at the ultimate (e-)mobile phone technology within the present foreign language teaching paradigm, presenting an actual application of the latest standards in the field.

To finish these introductory remarks, let us return to the tremendous changes initiated by the new technologies which most certainly necessitate a re-thinking of the way we teach and learn languages. The needs of effective language learning cannot be met by courses and software which mainly follow a traditional, behaviourist and instructional methodology. Therefore, it was argued that a constructivist paradigm for learning, focussing on learning in terms of knowledge construction rather than knowledge transmission is better suited for a kind of language learning that leads to the development not only of communicative and structural skills but which also integrates language awareness and learning competence as equally important aims into its curriculum.

In summary, it must be stated that over the past decade, language learning theory has seen a shift from a highly guided to a more open learning environment, with constructivism as a new and very much learner-centred paradigm for learning. *Learning is seen as a self-structured and self-motivated process of knowledge construction and the learner is regarded as a self-governed creator of knowledge.* In addition to the undeniable need to achieve instructional goals, the development of cognitive and strategic abilities suitable for the knowledge society is defined as one of the principle aims of a learning process based on knowledge construction and discovery learning. As far as new technologies and their use in language learning are concerned, the present monograph issue shows quite impressively that technology enhanced materials do have a lot of potential to assist the process of innovation which is needed in this field. It also shows that a lot of work still lies ahead as far as the successful integration of computer and internet into language learning is concerned. However, in order to ensure the success of future rich efforts, CALL or technology enhanced materials and learning opportunities need to be made use of or designed less in a role as instructional systems and exploited more in a role as tools for teaching and learning, thus giving more credibility to the claim that computers, particularly when used in a role of learning tools, will facilitate the implementation of a methodology for language learning that focuses more than in the past on authenticity in contents, context, and task with the aim of providing language learning opportunities more in tune with the acquisition of competences needed in real-life communication.

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ICT and Modern Foreign Languages: Learning Opportunities and Training Needs

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ABSTRACT

This article is divided into two main sections. The first section considers why technology has not lived up to its expectations in bringing about improvements in language learning. Many learning opportunities are offered by new technologies but they are not fully exploited, mainly owing to the lack of relevant training offered to teachers. In addition, with the advent of the Web, there is a disturbing trend towards removing the teacher from the learning process — which is simply not acceptable.

The second section of the article looks at a website.that offers a considerable volume of ICT training materials for language teachers, namely the ICT4LT website: http://www.ict4lt.org. The author examines the aims behind the site as a whole and the pattern of site visits, discussing the key issues and drawing conclusions based on an analysis of the pattern of visits to different modules of the site. Some important lessons have been learned regarding the type of training that teachers appear to need, for example: the continued interest in multimedia and the high demand for introductory courses. It is also evident that Web traffic is predominantly one-way and confined to certain sectors of the world, indicating that much more has to be done in order to stimulate discussion and to make the Web accessible to underserved regions of the world.

KEYWORDS: Technology, language learning, CALL, teacher training, ICT4LT, online education

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1. THE COMPUTER: PANACEA OR DELUSION?

Language teachers have been using Information and Communications Technology (ICT) in the modern languages classroom for over 20 years. The boom period began in the early1980s with the advent of the microcomputer, which opened up an exciting new range of learning opportunities for students of languages. The computer was hailed by enthusiasts as the panacea, but after the initial period of euphoria many teachers became disappointed with what the computer appeared to offer. This is a fairly typical sequence of events whenever a new technology becomes available to teachers. Oppenheimer (1997) writes:

> In 1922 Thomas Edison predicted that 'the motion picture is destined to revolutionize our educational system and [...] in a few years it will supplant largely, if not entirely, the use of textbooks.' Twenty-three years later, in 1945, William Levenson, the director of the Cleveland public schools' radio station, claimed that 'the time may come when a portable radio receiver will be as common in the classroom as is the blackboard.' Forty years after that the noted psychologist B.F. Skinner, referring to the first days of his 'teaching machines,' in the late 1950s and early 1960s, wrote, 'I was soon saying that, with the help of teaching machines and programmed instruction, students could learn twice as much in the same time and with the same effort as in a standard classroom.' (Oppenheimer 1997:45)

But the situation at the chalkface is another matter:

> The cycle began with big promises backed by the technology developers' research. In the classroom, however, teachers never really embraced the new tools, and no significant academic improvement occurred. (Oppenheimer 1997:45)

The remainder of Oppenheimer's article, which is significantly entitled "The Computer Delusion", points out that few lessons have been learned from past mistakes — a view that I have expressed myself in an article entitled "Lessons from the past, lessons for the future" (Davies 1997). The key question that needs to be asked is: Why do new technologies fail to live up to their expectations? There are a number of factors that Oppenheimer mentions in his article, but one of the main reasons is the failure to allocate a substantial budget for teacher training after the initial purchases of computer hardware and software have been made. This is rather like buying a car without setting aside a budget for driving lessons. It is not the hardware that is at fault, nor the software that runs on it; it is the failure to train teachers to make the best use of the hardware and software.

Training, unfortunately, is one of the budget areas that administrators perceive as non-essential, and it is therefore often the subject of financial cuts in times of economic restraint. Continuing the analogy of the driving test, some administrators perceive ICT training as a one-off event: once you have learned to "drive" a computer you don't need any further training. But computer technology changes so rapidly that constant and regular training is essential — and this is a major cost implication that is all too frequently overlooked. As for the budget, the crucial question is not the size of the budget but how it is divided up. My personal recommendation —

and one that I used to follow as a language centre director is:

- 30% hardware
- 30% software
- 30% staff training and materials development
- 10% contingency (unforeseeable costs)

Training may take a variety of different forms, e.g. staff may take time off to follow an intensive course, or they may be funded to attend a conference in order to update their knowledge. Above all, training for language teachers has to address their specific needs. A little and often is recommended.

II. THE DREAM — OR NIGHTMARE?

ICT offers a wealth of learning opportunities for students of languages, and the discrete use of computers in the classroom can undoubtedly enhance a language teacher's performance, but educational administrators and business training managers often have a blinkered view of computer technology, perceiving it as a way of automating the learning process and saving money on staffing. I wrote the following description of an imaginary scenario as an illustration of how business training managers perceived computer assisted language learning (CALL) in the early 1990s. To some people this is a dream; to others it is a nightmare:

> A business trainee is sitting at a computer following a language course. Step-by-step, the computer presents the essential vocabulary and structures. These are accompanied, where appropriate, by still and animated graphic images, photographs and video recordings. As new words and phrases are introduced, authentic male and female voices pronounce them and the learner repeats them. The learner's voice is recorded by the computer and played back. Any errors in pronunciation are indicated graphically on screen. Offending syllables are highlighted and additional practice is offered on sounds which the learner finds difficult. At the end of each presentation sequence, the computer tests the learner's grasp of the new vocabulary and structures, marking and recording those words and phrases which have been imperfectly recalled and offering feedback on points of grammar that the learner appears to have misunderstood. The learner has access at all times to an online dictionary, a reference grammar and verb conjugation tables. At the end of the work session the learner's progress is recorded by the computer, which enables the thread to be picked up at the next session. In addition, the learner's progress records — along with those of all the other trainees following the same course — can be accessed at any time by the training manager. (Davies 1992:113)

This fully-automated, programmed-learning approach was in vogue for a number of years. It derived to a large extent from the dreaded three-phase language lab drills:

1. Stimulus
2. Response
3. Feedback

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The main difference between early computer programs and language lab drills was that *response analysis* and *branching* were introduced into the above sequence, thus making it possible for *interaction* to take place between the learner and machine without the intervention of the teacher. The novelty value of the interaction soon wore off, however, and software designers began to look around for more interesting ways of using the computer. The considerable learning opportunities that computers offer were not fully exploited in the early days. It was therefore easy to dismiss computers as "drill-and-kill" machines.

But new ideas were forthcoming. Seminal works by Davies & Higgins (1982, 1985), Higgins & Johns (1986), Jones & Fortescue (1987), Hardisty & Windeatt (1989) listed a growing variety of CALL programs. Computers could do more than offer automated gap-filling and multiple-choices exercises. The following list is by no means exhaustive:

1. Reordering exercises — e.g. line and paragraph reordering
2. Text manipulation — including the innovative *total deletion* exercise
3. Word games
4. Action mazes
5. Simulations
6. Adventures
7. Discovery and exploratory programs
8. Guided writing programs
9. Reading comprehension exercises — including timed reading
10. Listening exercises
11. Building a personal database, e.g. vocabulary, grammar
12. Email activities

In addition, there was a move away from the behaviouristic, teacher-independent learning scenario that I describe above. As long ago as 1986, Chris Jones wrote an article with a title that says it all: "It's not so much the program: more what you do with it: the importance of methodology in CALL" (Jones 1986). Computer programs, he pointed out, have to be integrated into the classroom in just the same way as other materials. His message is clear: Don't try to remove the teacher from the language learning process. Jones's advice is just as valid today as it was in the mid-1980s:

1. Try it and see what happens. Don't pre-judge.
2. Don't expect the program to do all the work.
3. If things don't work out, don't automatically blame the program. The problem may lie elsewhere.
4. Above all, use your imagination. (Jones 1986:178)

III. THE DREAM REVISITED

Warschauer (1996) distinguishes three main phases of CALL:

- Behaviouristic
- Communicative
- Integrative:
  - Multimedia
  - Internet

At the time of writing this article, we are well into phase three. We have progressed beyond the behaviouristic phase, which began with the first CALL programs in the 1960s and extended into the early 1980s. Since the late 1970s we have dabbled in various ways with the communicative approach — and will probably continue to do so for some time.

III.1. Multimedia

Multimedia CALL, which became widely available towards the end of the 1980s, was a breakthrough insofar as it offered high-quality sound and video that could be integrated with the well-established combinations of text and graphics. Initially, multimedia was only made possible via interactive videodiscs, which required expensive and cumbersome equipment. Some interesting interactive videodisc products emerged: *Montevidisco* (Schneider & Bennion 1984), *Expodisc* (Davies 1991), *A la rencontre de Philippe* (Fuerstenberg 1993). All of these fall into the category of *simulations*.

Interactive videodiscs were supplanted by CD-ROMs, which ran on much less expensive and more compact equipment, but the video quality they offered was pitiful compared to that offered by the earlier 12-inch videodiscs. This forced CALL software developers to take a major leap backwards. Pedagogy was sacrificed at the expense of technology, and few imaginative, language-oriented simulations were produced for many years — LPI's *Oscar Lake* series being a notable exception: http://www.languagepub.com. It is only recently, with the advent of DVDs, that video quality has caught up with that offered by older technology.

More recently, we have seen programs incorporating speech technology — formerly the preserve of institutions with huge R&D budgets — and it is now possible to interact with a computer using one's voice as well as the keyboard and mouse. Popular programs such as Syracuse's *TriplePlay Plus* (now known as *Smart Start*) and Auralog's *Tell Me More Pro* have brought speech technology to the masses. My latest mobile phone incorporates speech technology, so that now when I am away from home I don't have to dial the number but simply press a button and say "phone home" clearly — and it works!

III.2. The Internet

There is no doubt that the Internet — especially the World Wide Web, which is a subset of the Internet — has made an enormous impact on many people's lives. The Web dates back to 1989, when Tim Berners-Lee's brilliant flash of insight spawned HTML (Berners-Lee 1998). Berners-Lee came up with the idea of the Web as a solution to the problem of information continually getting lost while he was working at CERN, the European Particle Physics Laboratory in Geneva. As a newcomer to CERN, he found it difficult to find out what was going on, and the Web — initially confined to CERN — was born. When the first Web browser was released in 1993 it became possible for the layperson to access information that previously only computer scientists had been able to retrieve using more complex tools..

It did not take long for teachers to realise what a valuable source of information they now had at their fingertips — information that they could download and exploit in the classroom. Later on, the Web began was used to store and present interactive exercises. But then pedagogy took another leap backwards, as most of the earlier Web-based exercises were just sets of multiple-choice or gap-filling drills of the "point-and-click-let's-move-on-quick" variety. Web-based interactive materials have undoubtedly improved but they have a long way to go before they catch up with the pedagogy and functionality offered by CALL programs delivered on CD-ROM or DVD. Only the delivery medium has improved, as Web-based activities can be accessed anytime and anywhere — at least in theory.

The Web has initiated a veritable revolution in education, especially in the areas in distance learning and *New Learning Environments* (NLE). NLE has become closely associated with the Web. I say "associated with" because NLE is a difficult term to define precisely. Originally, NLE was associated with a wide range of technologies and their applications to learning. It embraces a vision of learning that encourages learner independence (learner autonomy), and offers opportunities for distance learning and life-long learning, with the teacher becoming more of a facilitator than instructor. In recent years, however, the focus in NLE appears to be on the Web as the main delivery medium. My personal view is that this focus is far too narrow, as it overlooks the benefits of other tried and tested technologies. But educational institutions [illegible] rushing headlong into putting all their learning materials on the Web, in spite of the fact that there are many aspects of CALL that cannot (yet) be executed properly on the Web. CD-ROMs and DVDs — and even the interactive videodiscs of the 1980s — are far superior at handling sound and video, for example, which is why a hybrid approach is necessary. Furthermore, the role of the teacher in the language learning process is crucial to success.

The Web is undoubtedly a remarkable invention. My home telephone bill bears testimony to the many hours that I spend "surfing the Web" and managing three different websites. Thanks to the Web I am now able to carry out research that would not have been possible in pre-Web times. But there is, as Claire Bradin puts it, a "Dark Side of the Web" (Bradin 1997). In spite of this negative sounding title, Bradin presents a realistic and balanced view of the pros and cons of the Web in language learning and teaching. Felix (2001) presents a comprehensive survey: a wealth of information on websites that learners and teachers of languages may find useful, as well as a number of detailed case studies and reports on research into students' and teachers' attitudes to learning languages via the Web. At the beginning of her work Felix makes the following statement — which should be heeded by all Web enthusiasts: "… it takes a very special person to learn and, especially, speak a language without face-to-face communication" (Felix 2001:8).

In her survey of available Web materials, it becomes clear (thankfully) that relatively few websites attempt to take the teacher out of the language learning process:

> …what is freely accessible on the Web is often only part of a larger package that also invariably includes face-to-face teaching. It is likely that the most exciting learning takes place off-line in the creative processes negotiated between teachers and learners, sometimes across continents, in which the Web features as a tool rather than instructor. (Felix 2001:190-191)

The book concludes on a note which is both positive and realistic:

> Finally, however highly one rates the potential of the Web, it is difficult to imagine that any of this will ever replace best practice face-to-face teaching. What is becoming more and more obvious with emerging research, is that the new technologies offer excellent potential for adding value to classroom teaching in a large variety of ways. (Felix 2001:358).

The potential is there, the learning opportunities are there, but are the "customers" there? It was interesting to read the report in *The Times* (29 November 2000, p. 9) headed "King leaves Internet readers in suspense". Stephen King has decided not to complete his Web novel *The Plant* because — according to King — "it failed to grab the attention of readers on the Web". King found that a surprisingly high proportion of the readers accessing his site (75%-80%) made the "honesty payment" for being allowed to download chapters. "But", he said, "there are a lot fewer of them coming. Online people have the attention span of a grasshopper."

Critics of the Web lament the disappearance of traditional educational environments, citing the dubious ethics of those who wish to turn our universities into "Digital Diploma Mills" —the title of a five-part series of articles by David Noble (Noble 1997-2001):

> In his classic 1959 study of diploma mills for the American Council on Education, Robert Reid described the typical diploma mill as having the following characteristics: "no classrooms," "faculties are often untrained or nonexistent," and "the officers are unethical self-seekers whose qualifications are no better than their offerings." It is an apt description of the digital diploma mills now in the making. Quality higher education will not disappear entirely, but it will soon become the exclusive preserve of the privileged, available only to children of the rich and the powerful. For the rest of us a dismal new era of higher education has dawned. In ten years, we will look upon the wired remains of our once great democratic higher education system and wonder how we let it happen. That is, unless we decide now not to let it happen. (Noble: op. cit. Part I)

Other critics include Press & Washburn. The preamble to their article entitled "Digital Diplomas" says it all:

> Welcome to the brave new world of higher education, where professors are "content experts," classes are "courseware," and students are customers. But just what is a dot-com degree worth?" (Press & Washburn 2001)

Harsh words, but the above authors make some very important points that should not be overlooked in these times of technohype. The Web certainly has its "Dark Side", and evidence is already emerging from North America that online learning may go the same way as some of the early Web businesses that have crashed so spectacularly. Evidence coming out of North America suggests that e-learning courses do not recruit well:

> In 1997, facing a projected 50 percent increase in the state's student population over the next decade, Utah governor Mike Leavitt announced the formation of Western Governors University, a cyber-college backed by governors from 19 states that now offers online courses from 40 schools. "We are turning around the old notion that to be educated one had to go somewhere," Leavitt declared in a speech before the U.S. Senate's Commerce, Science, and Transportation Committee. "We are going to bring the knowledge and information to the learner," providing students with a high-quality education "while holding costs in check." By January 2000, Western Governors University had enrolled a mere 200 degree-seeking students. (Press & Washburn 2001)

There is no question that the Web is impressive as a collection of reference materials and as a delivery medium. It's a huge library that is accessible from your home, and it contains an increasing wealth of resources for language teachers. But do we really want to deliver *whole courses* via the Web? Do we really want to deprive young people of the valuable experience of leaving home, studying and socialising with their peers, joining societies, going to clubs and parties, travelling, and falling in love? Do we really want to breed a generation of screen-gazing zombies? I fear that as e-learning expands we are losing sight of the essential difference between *education*, the growth of the self for one's own lifelong purposes, and *training*, the shaping of an individual for others' short-term purposes. E-learning is more suited to training rather than education. And who is going to employ someone who has obtained an e-languages degree? Most employers expect a languages graduate to have had many hours of face-to-face contact with native speakers and, preferably, to have spent a substantial period of residence abroad. Assessment is another issue: I would expect a languages graduate to have passed written and oral examinations that had taken place in a properly controlled environment.

Learning languages via the Web is a controversial matter, but there is no question that the Web does offer considerable opportunities for the delivery of training materials. In the following sections I focus on the ICT4LT website as an example of a collection of ICT training materials for language teachers. I examine the aims behind the site as a whole and the pattern of visits to the site, discussing the key issues and drawing conclusions based on an analysis of the pattern of visits.

IV. ICT4LT

IV.1. Background

The ICT4LT website is the outcome of a project funded under the Socrates Programme of the European Commission and is located at http://www.ict4lt.org. It is the result of over two years' intensive work by an international team of experts during the period September 1998 to December 2000. The website offers15 training modules in ICT for language teachers at three different levels in English, Italian, Swedish and Finnish, and it is continually updated.

The original aim of the ICT4LT project was to design a syllabus and to deliver a Web-based training course in ICT for teachers of modern foreign languages (MFL), but as the project progressed it became obvious that turning the materials into a full-blown course and getting the course accredited was much more difficult than anticipated. There were enormous administrative hurdles to overcome, and it was quickly realised that a considerable amount of online tutoring would be necessary — and costly. So at present the ICT4LT materials are mainly used as an online reference library. ICT4LT does, however, form the basis of ICT awareness and training courses delivered in the traditional way in many educational institutions, and also in connection with regular in-service training courses for teachers. The ICT4LT materials consist of 15 modules at three different levels:

- Basic Level
  Module 1.1: Introduction to new technologies
  Module 1.2: Introduction to computer hardware and software
  Module 1.3: Using text tools in the MFL classroom
  Module 1.4: Introduction to CALL
  Module 1.5: Introduction to the Internet
- Intermediate Level
  Module 2.1: CALL methodology: integrating CALL into study programs
  Module 2.2: Introduction to multimedia CALL
  Module 2.3: Exploiting WWW resources on-line and off-line
  Module 2.4: Using concordance programs in the MFL classroom
  Module 2.5: Introduction to CALL authoring programs
- Advanced Level
  Module 3.1: Managing a multimedia language centre
  Module 3.2: CALL software design and implementation
  Module 3.3: Creating a WWW site
  Module 3.4: Corpus linguistics
  Module 3.5: Human Language Technologies

IV.2. ICT4LT: Analysis

IV.2.1 Is the Web really interactive?

A key question that has arisen as a result of piloting ICT4LT is: To what extent do people perceive the Web as an interactive learning environment? The evidence from the ICT4LT statistics is revealing. The ICT4LT website received around 40 000 "hits" in the three-month period September to November 2001. This is an impressive indication that the site is regarded as a valuable bank of materials. In the same three months, feedback from visitors to the ICT4LT discussion list was *zero*. No one, apart from myself and one other member of the ICT4LT management team, contributed a single email to the discussion list, and I received no more than six personal emails from visitors to the site, all of which *requested* rather than *offered* information. This is in spite of the fact that the ICT4LT site contains numerous discussion topics to which site visitors are invited to *contribute*. This trend appears to be typical of the Web as a whole, i.e.:

- Web people are habitual "lurkers".
- Web traffic is predominantly one-way, i.e. from the Web to the user.

Some means must therefore be found to stimulate feedback and debate among Web users. It is likely that this will require more intensive online tutoring.

IV.2.2. Where do visitors to ICT4LT come from?

A high proportion of visitors are based in educational institutions. Exact figures are difficult to come by, as often the visitor only leaves a numerical trace. The geographical pattern of visits to the ICT4LT site as a whole in the six-month period June-November 2001 is, however, revealing:

- Nearly 82% of ICT4LT site visits originated in Western Europe. This was to be expected, as the site is the outcome of a project initiated in the European Union.
- Visits from the three geographical areas of (i) North America, (ii) Central/Eastern Europe and (iii) "wired-up" Asia (Japan, Hong Kong, Taiwan, Singapore, Malaysia and Thailand) were in roughly equal numbers, with around 4% each of the total.
- The next two main areas represented were (a) Australia/New Zealand and (b) Central/South America, with around 2.5% each. Significantly, Brazil led the field in Central/South America, with around 40% of the total number of visits from that area.
- A mere 1% of the total number of visits to the ICT4LT site originated in *the rest of the world* — which includes Africa, China, the Indian Subcontinent and the Middle East. 98% of the

visitors from Africa came from the Republic of South Africa and Namibia (a total of 119), while only 13 came from other African countries. Only 27 visits originated in the whole of the Indian Subcontinent, and only 4 in the most populous country in the world, namely China.

These figures come as no surprise. They reflect what is already known about the Web in general:

- The Web is *not* World Wide.
- Access to the Web is restricted to the richer, liberal countries of the world, i.e. (i) those that can afford connectivity, and (ii) those that allow people free access to information.

We have a long way to go before the dream of access to information anytime and anywhere on the Web is realised.

IV.2.3. So What Do ICT4LT Visitors Want?

Basically, they want information. An overwhelming number of visitors enter the ICT4LT site via the *Index* page and the language-specific *Homepage*. They start with an overview of what the site is all about. They then progress to the *Contents* page, which contains a list of the 15 ICT4LT modules. At this point the pattern of visits becomes interesting. The information that follows refers only to the English language section of the site.

The *Glossary of Terminology* and the *Resource Centre* are visited more than any of the ICT4LT modules, except Module 2.2 (*Introduction to multimedia CALL*), which is marginally ahead of the *Glossary* in terms of numbers of visits. This seems to indicate that a high proportion of visitors are just looking up information. In addition, people regularly navigate from links in the main modules to the *Glossary* and the *Resource Centre*.

At the time of writing (December 2001), the order of popularity of the 15 modules is as follows. In the sections that follow I shall highlight the changes that have taken place in recent months and attempt to explain the pattern of visits.

1. Module 2.2: Introduction to multimedia CALL
2. Module 1.4: Introduction to CALL
3. Module 3.1: Managing a multimedia language centre
4. Module 1.1: Introduction to new technologies
5. Module 2.4: Using concordance programs in the MFL classroom
6. Module 1.5: Introduction to the Internet
7. Module 1.3: Using text tools in the MFL classroom
8. Module 3.3: Creating a WWW site
9. Module 3.2: CALL software design and implementation

10. Module 1.2: Introduction to computer hardware and software
11. Module 3.5: Human Language Technologies
12. Module 2.3: Exploiting WWW resources on-line and off-line
13. Module 2.5: Introduction to CALL authoring programs
14. Module 2.1: CALL methodology: integrating CALL into study programs
15. Module 3.4: Corpus linguistics

IV.2.3.a. Basic Level Modules

A high proportion of visitors to the ICT4LT site appear to be novices. The two modules that offer a general introduction to new technologies and language learning and teaching have remained for a long time near the top of the list of the most visited modules, and they are also the most popular Basic Level modules: namely Module 1.1 and Module 1.4. Does this indicate that there are still a lot of newcomers to CALL out there? The answer is probably "Yes, there will always be beginners". Evidence suggests that these two modules are used by a number of universities and teacher training colleges as the basis of introductory courses in ICT and language learning and teaching.

Module 1.5, *Introduction to the Internet*, maintains a high position, but it has fallen from a higher slot. Does this indicate that teachers are becoming more knowledgeable about the Internet, or is there now a more realistic appreciation of what the Internet can offer in comparison, for example, with multimedia, which is dealt with in Module 2.2 (*Introduction to multimedia CALL*) and has shot to the top of the list of all 15 modules?

Module 1.3, which focuses on the use of generic text tools in the languages classroom, declined sharply in popularity a few months ago, but it is now creeping up the list again, possibly as a result of the new information we have provided on *PowerPoint* and how to incorporate sound and pictures into word-processed documents and *PowerPoint* presentations. Language teachers in the UK are strongly encouraged to make use of generic software tools, including word-processors, database software, desk-top publishing packages, and even spreadsheets. This makes sense, as the tools are available in most educational institutions, so additional software purchases are not necessary. On the other hand, the preparation time that is required to make good use of such tools is often discounted. Furthermore, some educational administrators simply wish to avoid setting aside a reasonable budget for the purchase of dedicated CALL materials, so there may be an ulterior motive in encouraging the use of generic packages: i.e. save money on software and make the teachers work harder.

The introductory module on hardware and software, Module 1.2, has fallen from a higher position and now occupies the lowest slot out of all the Basic Level modules. It is the only "technical" module at the ICT4LT site — although it attempts to explain computer hardware and software in terms that the language teacher can understand. Most educational institutions have a resident ICT specialist these days, so there is probably less of a need for the layperson to be familiar with the technical aspects.

IV.2.3.b. Intermediate Level Modules

Module 2.2, *Introduction to multimedia CALL*, has remained consistently the most popular module for many months. The module begins by defining multimedia and looking back at earlier developments in interactive video. Technical aspects are briefly covered, and a representative selection of CD-ROMs/DVD-ROMs is described, giving the reader an overview of the wide range of learning opportunities the medium offers.

The renewed interest in multimedia is curious, because multimedia CALL is not a new phenomenon, having made its first appearance in the 1980s. But as soon as educational institutions began to buy multimedia CD-ROMs in reasonable quantities in around 1993-94, the Web made its public appearance, apparently offering learning materials free of charge. This appealed to budget managers who were put off by the high prices of the early CD-ROMs. CD-ROM prices then began to fall rapidly from figures such as 500 euros to more realistic figures of 60-70 euros. It was not easy to network the early CD-ROMs — and it can still be problematic — and language centre managers were not happy with the idea of buying lots of single-user copies and issuing them on demand to students. Finally, computer magazines started to give away CD-ROMs free, and the large computer stores began to offer "budget" CD-ROMs containing poor-quality materials. The overall result was that multimedia got a bad name. It is only now that CD-ROMs are beginning to make a comeback, and at last we have the high-quality video we require on DVD. This may explain the high level of interest in Module 2.2.

In addition, ICT coordinators in educational institutions are becoming more aware of the variety of multimedia hardware and software that language teachers need. In the past it was not at all unusual for school network managers to have a very poor appreciation of the learning opportunities offered by multimedia to language students. I have been invited on several occasions to run workshops for language teachers on school computer networks that lacked one or all or the following: soundcards, headphones and microphones! The situation is changing, but perhaps not rapidly enough.

Module 2.4, which deals with the use of concordance programs in the languages classroom, has climbed steadily from a very low position and has maintained its present position at No.5 for several months. This seems to indicate a shift in methodology. Concordancers are useful in the following ways:

- The teacher can use a concordancer to find examples of authentic usage to demonstrate a point of grammar, typical collocations, etc.
- The teacher can generate exercises based on examples drawn from a variety of corpora.

- Students can work out rules of grammar and usage for themselves by searching for key words in context.
- Students are encouraged to be sceptical about explicit rules by drawing on the data provided by authentic texts.

Concordancers are not new, of course. The concept goes back hundreds of years, but it is only since the advent of the computer age that concordancer became commonplace tools for linguistic and literary researchers. Since the 1980s, concordancers have been available to the language teacher for classroom use — thanks to the pioneering work carried out by Tim Johns: http://web.bham.ac.uk/johnstf. Johns wrote one of the first commercially available classroom concordancers: *MicroConcord*.

Using a concordancer, teachers can quickly produce handouts and exercises based on authentic materials but, more importantly, a concordancer turns the student into a *researcher* who can establish rules of grammar and usage for him/herself. In other words, concordancers have a key role to play in autonomous learning — or in *Data-Driven Learning* as Johns describes it. It is in the EFL world that concordancers have made their biggest impact, but it is clear from visits to the ICT4LT site that MFL teachers are also beginning to see their value.

Module 2.3, *Exploiting WWW resources offline*, has fallen from a high position to No. 12 on the list. I find this difficult to explain, as it would seem logical to progress from an introduction to the Internet (Module 1.5), which is still quite high in the list, to this module. One would therefore expect a higher proportion of visitors, but there is a fall-off of nearly 50%. Have the visitors had negative experiences with the Web and do not wish to find out more, or does the introductory module tell them all they need to know? Or, having looked at the other modules, do they find other things that are more interesting?

Felix (2001) is enthusiastic about the usefulness of the Web in language learning and teaching, but she is also realistic and does not hesitate to mention its shortcomings compared to other delivery media, e.g. the problems associated with bandwidth and plug-ins, and the lack of universal standards for accessing the Web. CD-ROMs are still more reliable in delivering graphics, sound and video:

> While improvements have not been uniform, they have been achieved largely by way of better technologies that have led, among other things, to better presentation. This is notable in the case of graphics and sound, even if the Web still cannot match the reliable quality offered by CD-ROM. [...] Technological advance, however, is not always an unmixed blessing; while we are still waiting for the long promised broadband services to become widely available, sites using the latest developments in graphics can take a wearying time to download over a 56K modem. There are other problems online, too — some plug-ins do not work in every context, and some sites are available only to Internet Explorer or Netscape, while others cater for Windows but not Macintosh. The Web's ideal of universal standards is not always achieved." (Felix 2001:189)

This is why the designer of online language learning materials is advised to adopt

> ... hybrid approaches designed to avoid potential technical problems, such as downloading activities from the Web on to a self-contained Intranet, integrating CD-ROMs and the Web, or running audio conferencing or videoconferencing with Web activities." (Felix 2001:190)

Perhaps ICT4LT visitors are beginning to appreciate that one needs a variety of approaches to CALL.

Module 2.5, which deals with authoring programs, has slipped down the list to position No. 13. This is the lowest position of the three modules that provide information for teachers interested in authoring their own materials. The other two modules in this category — 3.3 (*Creating a WWW site*) and 3.2 (*CALL software design and implementation*) — have dropped respectively to positions No. 8 and No. 9.

Why has the do-it-yourself approach to CALL declined in popularity? Perhaps I was right when I made the following statement in an article written five years ago:

> The do-it-yourself approach to CALL software creation has rarely worked. Only those with hours of dedication at their disposal have made a success of it. The past is littered with dead authoring packages. (Davies 1997:41)

It's a question of time — which most language teachers do not have. Teachers are mainly interested in buying off-the-shelf materials or a simple authoring tool, e.g. Camsoft's *Fun with Texts* or Wida Software's *Storyboard*, which generate a lot of work for the student with the minimum effort on the part of the teacher. Both of these packages continue to be bestsellers. It is significant that Module 3.3, *Creating a WWW site*, occupies the highest position of the do-it-yourself modules. This may be due to the availability of easy-to-use HTML authoring tools such as *Front Page* and *Dreamweaver*, and exercise generators such as *Hot Potatoes*. Or perhaps it has more to do with the Web as a convenient delivery medium — or an Intranet, which is becoming more common in educational institutions.

Module 2.1 of ICT4LT is concerned with CALL methodology and ways of integrating CALL into study programmes. Bearing in mind the article by Jones cited earlier on in this article (Jones 1986), one would have expected this module to be a popular choice. Curiously, however, it has remained consistently the second least popular module for a period of many months. The module challenges views expressed by sceptics such as Oppenheimer (1997), to whom I refer at the beginning of this article. The author of Module 2.1 encourages the teacher to consider how students react to a piece of software and suggests a range classroom activities that the teacher might introduce in order to enhance the impact of ICT. Module 2.1, in other words, addresses both learner's and teacher's needs, but for some reason or other this does not have much appeal. Could it be that teachers are not interested in integration and that they would rather let the computer do all the work?

IV.2.3.c. Advanced Level Modules

One would expect advanced level modules in any set of learning/training materials to be lower in popularity than the earlier modules. There is a natural fall-off as learners/trainees progress — which is well known to publishers of language learning materials: courses for beginners bring in the money.

It is no surprise therefore that the more academic modules, especially 3.4 (*Corpus linguistics*) and 3.5 (*Human Language Technologies*), are low down the list, respectively position No. 15 (bottom of the list) and position No. 9. Corpus linguistics is mainly of interest to university researchers, and Human Language Technologies appeal mainly to people who bridge the disciplines of human languages and computer science. Nevertheless, one cannot say that the number of visits to the pages of these two modules is insignificant. The most popular module, *Introduction to multimedia CALL*, receives three times as many visits as the least popular module, so the gap is not that wide.

As indicated above, the do-it-yourself approach to CALL, which is covered in Module 3.2, appears to be waning in popularity, apart from writing materials for the Web, which is covered in Module 3.3.

Module 3.1, *Managing a multimedia language centre*, was conceived as a module for the advanced trainee. Its popularity at position No. 3 seems to indicate that everyone wants to manage a multimedia centre rather than teach! The module contains a number of case studies, which probably accounts for its appeal, and there is a strong emphasis on management of the learning environment, especially ways of encouraging learner autonomy.

IV.3. ICT4LT: The Future

At present access to the ICT4LT website is free of charge. For the time being the site will consist of a bank of materials that can be accessed and downloaded. There will be no online tuition, but visitors may continue to address questions to the management team and to members of the discussion list.

Ways of integrating the materials into a Web-based learning environment such as *Blackboard* — with online tuition — are being considered. This is likely to be a lengthy process, however, and it is unlikely that the ICT4LT bank of materials in its present form will disappear. I shall continue to update the site on a regular basis.

One new module, *Assessment and testing*, is planned, and new case studies will be added to Module 3.1, *Managing a multimedia language centre*. Suggestions for further additions are welcomed.

V. A FINAL MESSAGE

I conclude this article with a final message to educational administrators:

- Computers offer a wealth of learning opportunities to language learners.
- Computers don't work without software.
- Computers are tools for teachers — not replacements.
- Training staff to use computers takes time and costs lot of money — but it's worth it in the end!

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Authoring, Pedagogy and the Web: Expectations *Versus* Reality

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ABSTRACT

The Internet has stimulated enormous expectation in many fields of learning, including language acquisition. From a position in which technology enhanced language learning was at the forefront of pedagogic development, we now see a situation in which good design — both pedagogic and instructional — is all too often sacrificed for the sake of technological convenience. Some of the techniques which were possible using multimedia on a CD-ROM platform have all but disappeared as end users expect to find good learning experiences from the Web.

One major reason why good design principles are often ignored in web-based learning design is the lack of sufficient, easy-to-use authoring tools, leading to an over-reliance on simple hypertext routines (though even with these there is no excuse for the woeful neglect of feedback techniques so often encountered), or the need to rely on technically trained personnel with an insufficient understanding of clear instructional design principles.

Help is beginning to arrive with some good authoring systems, and this work looks at *Hot Potatoes* and *MALTED*, whilst at the same time postulating that a clear approach to pedagogic issues and, above all, instructional design work, can still create sound learning programs with even simple hypertext tools. The work concludes with a practical check-list of advice for the would-be author of language learning programs.

KEYWORDS: Authoring, authoring systems, e-learning, feedback, interactive video, instructional design multimedia, pedagogic design

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I. INTRODUCTION

The massive growth in the provision of web pages, together with the vast increase of user access to them, has, of course, caused a revolution in the use of information, with personal, social and even political consequences never dreamt of when the Internet and the World Wide Web first began. As the Internet has developed, it has become more sophisticated, and new possibilities abound. The terms Internet and WWW are not synonymous — the Internet offers us more than the Web — including email and file transfers via FTP. The arrival of so-called "e-commerce" has been marked by a few notable events. These include the failure of many companies to return a profit, but alongside this the enormous "hype" which has led to over-high expectations.

And this is where language learning comes in. Alongside the over-hyped arrival of e-commerce, we have seen the term "e-learning" being increasingly used. There has never been a completely satisfactory definition of that term. All that can be said is that it is infinitely preferable to "webucation"! There is another term, which is "web-based learning", which is equally suspect, since it often means ***internet***-based learning, involving (as it often does) e-mails and file transfers. This may seem like an exercise in hair-splitting, but in fact it has important consequences. The purpose of this work is to demonstrate that the enormous expectations of what should be delivered over the Internet in terms of language learning does not begin to be matched by the reality of what actually can be delivered. It will explore the reasons for this, which are complex, and which cover pedagogic and technical issues, and offer suggestions for a different approach which will both exploit the enormous potential which the Internet can offer, both now and in the foreseeable future, whilst being realistic about its limitations. Not least, it will mention the thorny subject of whether all this is value for money!

II. THE SCOPE

The Internet, as we have stated, can be used for many purposes. A work such as this cannot hope to cover all aspects. Therefore we will concentrate on the issue of second language acquisition (rather than cross-cultural training, etc.) and on the mechanisms for computer mediated learning for language skills. Furthermore, we will not attempt to address the use of email, chat-rooms, student management systems, video-conferencing, and the like. No inference should be made that any or all of these do not have value. But it is the pedagogic aspects that we will be exploring in terms of the synchronous learning environment that has been developed over the years.

III. THE BACKGROUND

Computer Assisted Language Learning (CALL) covers a variety of areas, and the term "technology enhanced language learning" (or TELL) might be a better title. The reason for this is that many, rightly or wrongly, still associate CALL with text-based drills and exercises. But CALL (we shall continue to use the term) has progressed beyond measure over the years. The problem is that it is still largely viewed as experimental, or innovative, even though there has been enormous acceptance of its value and effectiveness. It is hard to see exactly why this should be so. Quite possibly it is that the language learning community was at the vanguard of computer mediated instruction for many years and in many ways — one only has to think of the way in which multimedia, and above all its sound facilities, has been embraced as being of very special benefit for our needs, rather than a useful extra aspect, as in many other learning disciplines.

But now, and rather suddenly, the agenda has changed. The explosion in Internet use, and along with it the establishment and growth of "e-learning" sites, has kindled an expectation and a demand which is hard to satisfy. In spite of some embryonic disillusionment[1], training over the Internet is a fact and looks like being here to stay. So why is language learning not out there with the best of them — showing the same levels of maturity and market penetration as other disciplines — notably those in management and business learning?

Our contention is that there is one prime reason for this — the special nature of language learning itself — and that there are two obstacles to overcoming the problem, the first of which is technical, the second a design issue.

IV. CHOPIN DIDN'T USE THE WEB

When making comparisons with other disciplines, one has first to realise the contrast between skills-based and knowledge-based learning. Would you really expect to learn to play the piano from an Internet course? A search[2] of the web revealed that such a web site does indeed exist[3], but cannot get much further than displaying pages from a tutorial, seeming to forget the lesson most of us learnt long ago — that if it can be done better another way, then don't do it!

But in spite of this, it seems that the expectations (and not always from non-linguists, it has to be said) are high that the impossible can be achieved. Our "piano" is, of course, communication, and above all oral communication, and this means that we are in skills-based territory. It will take just a cursory glance at a few learning programmes on the Internet in disciplines other than language learning to show that the majority of them are knowledge-based, and require much simpler techniques — techniques in which the use of multimedia is ***incidental*** to the learning process and a part of the instructional design solution, whereas for language learning we have a different imperative — the need to have access to the sound of the language and, ideally, realia in terms of graphics and/or videos in order to put the language skills into context. For us, multimedia is the end as well as the means. After all, since we do this in the classroom as a matter of course, why should it be that different on the Internet? Ask yourself this question of many offerings on the Web — how much more does it offer us than a book? Because many web sites offer little more than a book enhanced by hyperlinks, accompanied by (often) poorly designed tests.

V. WHAT WE KNOW WE CAN DO

Technology frightens us by its ever-accelerating rate of change. This has enormous implications for pedagogy in general, and for language learning in particular. The introduction of sound and superior graphics opened up a world of advantage for us, and enabled the design of computer-aided routines that arguably put language learning in the forefront of the computer-aided learning field. But technological advance is not always the best thing — those who have been around CALL for a long time will recall that in the late 1980s we had access to full-screen, full-motion video through the use of the analogue interactive video system[4]. The quality of this system is only just beginning to be matched by digital systems such as DVDRom, and the Web is a long way from achieving such quality at the current transmission rates.

But the real problem has always been that of design and program creation. Good (and we emphasise the word) pedagogic design and sophisticated multimedia creation are both difficult and time-consuming. A major program or course could easily take two years to develop, by which time the technical platform may well have changed. In spite of all the experiments, evaluations and information exchange in this field (and CALL is one of the most openly collaborative disciplines there is[5]), we only just begin to scratch the surface of what is possible before new techniques and new skills are required.

Nevertheless, CALL has achieved a considerable respect as a discipline in its own right, and as a result of this, there is much consensus as to good practice and design of materials with respect to the computer itself — leaving aside the Internet for the moment. Such consensus is not restrictive, and different pedagogic approaches can be catered for — including many degrees of constructivism. Above all, one could cite the question of feedback as being the most important factor of all, and one to which we shall return later. It is not our intention to try to describe in any detail here the various components that go to make up good pedagogic and instructional design for language learning, and there are other places where one can receive support[6]. The point is that we have just reached what could be described as a "plateau" where we might in theory draw breath and take stock — create a wider range of sound programs and routines, develop good authoring techniques and platforms, work out global parameters for instructional design and so on. The plateau has occurred because of a momentary (and relative) stabilisation of our platform

— ubiquitous CD-ROM and multimedia hardware, cheap memory, speech recognition potential not yet fulfilled, etc. — but we have been unable to take advantage of the situation and perfect our techniques. Why? Because everyone wants the Web!

Before we move on to discuss the Web itself, it would be apposite just to refer to a few of the techniques we can accept as "standard". These techniques refer to the level of interactivity that we can use to support language learning. We are now very used to text-entry routines, although these are becoming rarer and tend to be used at the lower levels. Drag and drop, click to match, clicking on options, all spring to mind. In fact there are relatively few things a computer can do in terms of computer interactivity — it is the way in which these routines are incorporated into instructional designs that distinguishes different usage. To give an example, one of the things that a computer does best is to branch — in other words to do something different according to differing user input. The classic way in which this is used is for multiple choice routines. But branching can be used in a variety of ways — multiple choice questions (MCQs) can be of the "classic" style, but there is no reason why the same computer interactivity cannot be used for a variety of different instructional design set-ups. MCQs could have more than one, or every answer, right, or all wrong, and could offer feedback to assist the progress of the learner. Instead of the more conventional choice-making routines, learners could make choices that lead to a further "branch" to enable them to view the consequences of their choices — a different form of intrinsic feedback known as "conditional branching". All these stem from the same basic computer function.

But in addition, the advent of multimedia has given us a new dimension in terms of interactivity. Not only can we listen to sound (which of course was always possible with a tape recorder), but we can ally sounds to other routines (such as multiple selection) and get feedback from discriminatory choices involving sound, something which is only possible with a computer (or with that other computer, the human being!). We can interact with video clips in the same way. We can also input the human voice with sound capture techniques, role-play and get the user to perfect his/her utterances, and so on.

All these are now accepted as standard techniques and there are many authoring systems, of various levels of quality and necessitating various levels of technical knowledge, to enable us to create courseware that is technically and pedagogically sound.

VI. WHAT WE (ALMOST) CAN'T DO AND WHY WE ARE REQUIRED TO DO IT

But the well-known principle we should apply to computer-based materials: if it's better done on paper, then do it on paper; or if it's better done in the classroom then do it there….. seems to get thrown out of the window when it comes to using the Web.

Most of us have learnt over the years that it should be the pedagogy which drives materials creation, not the technology — even though there are those who do not seem to have learnt this message yet! The starting point should never be the technology, whether we are talking about platform or software, but the learning design principles. So if this were to be applied to the Web, we would have to conclude that many things cannot be done via the Internet or would be better done through another medium. This next part of the work will examine this problem.

The problem which has arisen now is that the Internet, and in particular its component element, the Web, offers us a different and highly restricted range of technical opportunities for delivering language learning. HTML is *de facto* the default system for all Web browsers and that leaves us with a major problem — and one that is far more serious for us in the language learning community than it might be for other learning disciplines. HTML, unless enhanced (more later on this), employs the basic "click and go" function which is similar to the computer interaction described in the last section. When a "hyperlink" is clicked, the "page" is replaced by something else — although there are some relatively easy ways to enhance this, such as using "frames", which offer a limited though valuable extra dimension. Other forms of interactivity are not generally possible (other than a limited use of sound playback) without "enhancing" HTML routines.

So the obvious inference is that we should use these enhancements. If only life were that simple.... Whereas there is a whole raft of authoring systems for non-web based computer interactions which ensure that we do not have to be C++ or Visual Basic programmers, (some of them specific to language learning), very few such authoring programs exist for us to exploit the use of the Web. In fact, it is relatively easy to create simple routines using HTML programs which are often not recognised as authoring systems — such as Microsoft Front Page® — but when one progresses to the creation of higher levels of interactivity, the additional routines that have to be used "on top of" HTML, such as Java, JavaScript, Flash, ShockWave and so on, demand a learning curve which is relatively high and will not appeal to any but the most die-hard enthusiast programmer/linguist. Thus having to have recourse to programmers for these techniques ensures that there is a high price to be paid for production.

This may explain the extreme poverty of the vast majority of language learning routines available "live" over the Web (though we will question this assumption in due course — it is only one of the reasons in our opinion). We should be familiar with the style of things we so often see: value-enhanced "books" accompanied by tests; multiple choice exercises that offer no feedback; the lack of any meaningful user interaction with sound or video; and so on. It is our contention that there are two major reasons for this: the HTML-based structure of the Web itself, and the lack of application of sound pedagogic and instructional design parameters to the materials in question. This is further compounded by the lack of authoring systems, with some notable exceptions, to which we shall make reference later.

To sum up the situation in a different way. Although some of the interactivity which we currently employ in CALL can be made available over the Internet, most of the more complex routines demand high programming skills (and hence expense) and some of them are virtually unobtainable given the current state of the art. To persist with a demand for web-based learning for outcomes which cannot realistically be delivered, seems to us to once more be placing the technical horse before the pedagogic cart, just as occurred in earlier days when we used the excuse that the technology could not yet deliver some facilities as a reason for asking students to do nonsensical things, such as "writing" a dialogue because we did not have sound cards for them to speak it. The wheel is turning full circle.

However, all is not as bleak as it sounds…

VII. WHAT WE CAN DO ON THE WWW IF WE PUT OUR MIND TO IT

The good news is that there are things we can do, and do well. Firstly, on the technical level, there are authoring tools becoming available to assist production. Even if not all linguists want to use them themselves, they will still be cheaper than using high level programming resources.

Hot Potatoes[7] is well known in the CALL community, and it offers easy creation of a restricted, though increasingly wide range of exercises. It can be tailored as to its on-screen presentation, and, above all, will offer feedback and a pragmatic approach to non-standard multiple selection tasks. The system clearly works over the WWW and its use is not restricted to language learning. Its main drawbacks are its restricted range of activities, and the difficulty of linkage of the exercises created into a hierarchical or progressive learning environment.

MALTED[8] (Multimedia Authoring for Language Tuition and Educational Development) is a system aimed specifically at language learning. It has been created as the result of a large European Commission funded project, and is scheduled shortly to arrive on the market as "freeware". As with *Hot Potatoes* it works across the WWW, and in addition has a feature of linkage to an asset base of materials. There is a range of templates for many different activity types. Its main asset is a powerful "drag and drop" authoring routine which allows the inclusion of virtually any media objects on the screen — thus offering efficient feedback and support systems. It also has different levels of granularity, with the possibility of including activities within an overall framework to create a course or other hierarchical or progressive sequence. Its disadvantages are its clumsy handling of text and inadequate rendering of sound input/output facilities. Hopefully these will be improved in later versions.

The things that both these systems have in common is their use of "extra" routines, (JavaScript and Java respectively), on top of the standard "mark-up" languages, thus making available the additional functions which could only otherwise be achieved through higher programming skills as identified earlier. They do not yet go far enough, but it is a start…

VIII. WHAT WE HAVE NO EXCUSE FOR *NOT* DOING ON THE WWW

Having examined what is possible and what is difficult on the Web, there is still an important outstanding issue. The lack of tools and the nature of web browsers do not at all explain some of the poor learning routines and environments we see. It would be invidious to single any out, and in any case web sites are always moving or changing, but it would not take a long "surf" session to find many examples of poor design. For instance, there are so many exercises which offer no feedback other than the "Sorry, try again" style. This is no more acceptable on the Web than it would be in other learning environments, so it is difficult to see what justification there can be for it. Nor can a technical excuse be used — feedback for multiple choice routines is perfectly possible using pure HTML language.

The real issue here is one of design, stemming from a seeming lack of concern or knowledge of how second languages are acquired, and how students learn best using their little 4x3 window on the world. In so many cases it is not only a lack of instructional and ergonomic design (though, strangely, there often seems to be some sophisticated screen design work involved) but, far worse from our point of view, even the basic pedagogic learning principles seem to have been eschewed, presumably in favour of a "quick and dirty" programming approach.

The whole question of the use of feedback is a fundamental one. It is the key to the use of computer-mediated study, and is the primary advantage that computer programs, ***if well designed***, can have over most other methods. Computer feedback can never replace the classroom or the real language environment, but it does offer significant advantages. Research[9] has shown that students enjoy the non-threatening environment which can be presented, and appreciate the intensive work they can do which, depending on the nature of the task involved, is not always possible even in the classroom. To cite just two examples, a class of twenty students could all be role-playing a dialogue at the same time; or imagine a large group of students exploring a text, all of them choosing to access a completely different range of support explanations and/or exercises, thus working at their own pace. None of this is really very difficult to achieve, given careful planning and design. But learners will make better progress if they understand ***why*** they made mistakes, rather than merely knowing that they have made them, and how many they have made. One can even see many web sites (and for that matter other computer programs) which fail to distinguish between **ACTIVITY**, **EXERCISE** and **TEST**. Such basic failures have everything to do with poor instructional design, and little or nothing to do with technical limitations.

IX. WHAT WE STILL NEED

So what do we need to improve the situation? Firstly, in our view there has to be a change in the level of awareness. Over-hyping the Web is as bad as those advertisements that tell us we can learn a language in 24 hours. There does exist good practice on the Web and we need more publicity for this — there are examples of publications in this field[10]. More, and more reliable "portals" which will give us access to quality assured sites are an urgent necessity. It is difficult to see how this might be funded, but a quality assurance scheme for language learning web sites would be a major step forward.

We must stop falling into the trap of thinking that learning over the Web is going to be a cheap(er) option. Some personal research, though rudimentary, into the costings of providing web-based learning in languages suggests that it would be almost impossible to receive a good return on investment. Even if one could persuade a wide audience to pay for courses, this will never be of the order of magnitude which might be possible for, say, management training, and, given the high cost of creating ***pedagogically sound*** programs, it is hard to see how money could be made, and so it becomes clearer as to why there are not hundreds of publishers out there rushing to offer us quality language training over the Internet, and also why so much of what is there is unsound.

One way to ameliorate this situation will be to have quality authoring systems specifically for creating language-training routines available over the Web. These should include the higher functions which will assist in the creation of more satisfactory instructional and ergonomic design. They should also contain technical solutions that need to be developed. The ensuing reduction in production costs might make it possible for us to see better and more widely available materials on the WWW.

It is clear that things may change in the not too distant future. The advent of broad band connection to the Web will make possible some synchronous interactions that are currently quite difficult and slow (such as learner sound input). The take-up of these communication networks varies from country to country and depends on many factors, commercial and political. For example in the UK the rate of introduction of broad band and digital networks is slow, whereas other European countries are developing good infrastructures.

But, given what we have discussed earlier, none of this will be valid if there is not be a better quality of program design. As we have stated, there is no current technical or financial obstacle to the development of programs with high quality feedback and carefully worked out pedagogical principles. So one has to have little confidence that there would be much difference if new tools became available. What one could hope for might be that more and better practitioners got involved in quality materials creation. Added to this, there is a clear need for more training in instructional design techniques for language learning and for greater dissemination of best practice.

X. DON'T BE DESPONDENT!

The preceding sections have been presented in an attempt to be realistic about "web-based learning" rather than pessimistic. It would therefore be wrong to conclude without offering some practical advice for those wishing to create learning materials available over the Internet.

It is obviously not possible here to produce a full course on production techniques, and there are places to go for advice[11]. What we aim to do is to produce a set of questions and suggestions as a checklist and aide-mémoire.

- Ask yourself why you are doing it. Would it be better done another way?
- Ask yourself what is the added value of using the Web.
- Find out all you can about techniques. Read the literature[12].
- Remember that the moment you publish on the Web, you have an audience of many millions[13], unless you employ password access.
- If you have any links to other sites, check them regularly to see that they are still live.
- Think "end users" all the time — they are the ones who might have to wait minutes for your screens to download if they have a slow connection and you have used complex graphics!
- Use the US principle -- K.I.S.S. — "**Keep It Simple, Stupid!**"
- Start from first principles — pedagogic design first, instructional design next, technical considerations later. In the classic multimedia production cycle, content creation comes towards the end of the process, not the beginning! Make a design before you do anything else.
- Pilot your design and materials with suitable learners and monitor their reaction to your learning environment — ergonomic as well as pedagogic factors.
- Cost out your designs if this is to be a significant factor.
- Resist demands from "authorities" that web-based learning should reduce costs. It will not.
- Check out any available authoring systems. Only devote "learning curve" time to acquiring advanced programming techniques if you are really dedicated.
- If programming at the most basic HTML level, contemplate using all the available facilities so that a better pedagogic design can be presented (including high levels of feedback — see below).
- Always preview your work in a variety of browsers at varying screen resolutions.
- Give the students all the contextualised feedback you can possibly provide, unless you are offering a test.
- Don't sacrifice feedback for reduction of costs.
- Make a clear distinction between learner activities, exercises and tests.

- If you have a good idea that would work better on a CD-ROM or won't work synchronously over the Web, then create a CD-ROM version or use file transfer for the learners to download material rather than use it live.
- If you want to get more involved — subscribe to EuroCall[14].

XI. TO SUMMARISE…

Whether we call it "e-Learning", "web-based learning" or whatever, we should be clear that this is not something that will solve all our language learning problems — pedagogic, sociological or financial. There are, though, many advantages in harnessing the power of the Internet to help us. But this will only be effective if we are realistic about its current limitations as well as its future potential, and as long as we are not seduced by the technology into reducing the role of pedagogic and instructional design into the servant of the former, rather than its master.

NOTES

1. See the series of articles by David Noble at http://communication.ucsd.edu/dl/ and in particular "The Bloom is off the Rose", http://communication.ucsd.edu/dl/ddm3.html.
2. Using http://www.google.com, which is probably the most powerful search engine.
3. http://www.pianotuition.co.uk/ — but if this site is unavailable, try another search!
4. The author still feels that instructional design techniques developed in *Expodisc Spanish*, a language course for business and export marketing using interactive video, offer much to current instructional design work.
5. Details of the EuroCall organisation, including the annual conference, can be found onhttp://www.eurocall.org/.
6. http://www.ict4lt.org has an extensive web site offering advice and training from experienced language materials creators.
7. Hot Potatoes was developed in Canada at the University of Victoria, and details can be found on http://web.uvic.ca/hrd/halfbaked/
8. http://www.malted.com
9. Very few serious analyses have been made of the creative processes and student uses of CALL materials. Details of the TELL consortium materials project can be found onhttp://www.hull.ac.uk/cti/tell/, and in particular accounts of formative and summative evaluations on http://www.hull.ac.uk/cti/tell/eval.htm/.
10. Graham Davies offers many useful links and advice on his company web site: http://www.camsoftpartners.co.uk/index.htm where one can also find more details of the two books by Uschi Felix — *Virtual Language Learning: Finding the Gems Amongst the Pebble*, and *Beyond Babel: Language Learning Online*. Uschi is the director of the Language Centre at Monash University, Australia: http://www.arts.monash.edu.au/lc/. Again it is worth visiting http://www.ict4lt.org.
11. E.g. http://www.ict4lt.org
12. A good starting point is the *ReCALL* journal: http://www.eurocall.org/recall.htm which publishes many papers from the EuroCall conferences. There is also the CALL journal: http://www.swets.nl/sps/journals/call.html which deals with the same field. An article of this author (*Will the Web catch enough flies? Where web-based learning cannot yet reach*) can be found on http://ourworld.cs.com/bangspaul/EurocallPB.htm. There are others — search with Google!
13. All the search engines send out "crawlers" to search the Internet for key words which they store in vast databases — your web pages will be "crawled" and capable of being found by them.
14. http://www.eurocall.org/

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http://communication.ucsd.edu/dl/ddm3.html
For a negative view of web-based learning

http://www.google.com
A useful search engine, and probably the best

http://www.pianotuition.co.uk/
For an example of how not to use the web

http://www.eurocall.org/
The major European organization for CALL

http://www.ict4lt.org
A practical site full of information for practitioners

http://web.uvic.ca/hrd/halfbaked/
The place to find information on the Hot Potatoes program

http://www.malted.com
The web site of the new languages authoring tool

http://www.hull.ac.uk/cti/tell/
Practical information on CALL and evaluation

http://www.camsoftpartners.co.uk/index.htm
Use this site to follow up other useful links

http://www.arts.monash.edu.au/lc/
Monash University offers much practical experience

http://www.eurocall.org/recall.htm
The Journal where many EuroCall papers are published

http://www.swets.nl/sps/journals/call.html
Another useful journal

http://members.aol.com/bangspaul/EurocallPB.htm
My own web site — with a paper presented at EuroCall 2001.

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Web-based Instructional Environments: Tools and Techniques for Effective Second Language Acquisition

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ABSTRACT

The potential of the Internet and especially the World Wide Web for the teaching and learning of foreign languages has grown spectacularly in the past five years. Nevertheless, designing and implementing sound materials for an online learning environment involves time-consuming processes in which many instructors may be reluctant to participate. For this reason, Web-based course management systems (WCMSs) have begun to flourish in the market, in an effort to assist teachers to create learning environments in which students have the necessary means to interact effectively with their peers, their instructors, and the course material.

This article reviews the nature of WCMSs, their advantages and disadvantages, and their potential for language learning by focusing on key issues that surround the design, implementation, and assessment of Web-based language courses, and by explaining how to integrate WCMSs to increase students' exposure to authentic materials and language-learning related activities, and to motivate them to engage in meaningful communication processes and collaborative activities.

KEYWORDS: Web-based instruction, Web-based course management systems, online learning environments, Web course development tools, online interaction, Web-based communication, assessment of online learning

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I. INTRODUCTION

The Internet has changed the way people interact with each other in their professional and personal lives. Although access to the Internet is not homogenous in every country, let alone in all the world[1], the advantages of the Internet in facilitating communication and in providing access to information are contributing to the rapid expansion of its applications in all professional fields, including language instruction.

Nevertheless, the marriage between technology and language learning originated many years before the creation of the Internet and, for a long time this relationship was independent of the Internet's development (Ahmad, Corbett, Rogers & Sussex 1985; CALICO Journal 1995; Levy 1997; Delcloque, Farrington & Felix 2000; Salaberry 2001). The first applications of computer technology to language instruction occurred in the 30's and involved translation utilities. While the 40's and 50's were not especially significant in the application of computers in the language field, the late 60's and the 70's witnessed important contributions. This latter period of innovation was marked by pioneer computer-assisted language learning programs founded at Stanford University, State University of New York, University of Dartmouth, and University of Illinois. Progress continued in the late 70's and early 80's with the introduction of the microcomputer. By the end of the latter decade, multimedia systems had emerged as a focal point of a nouveau applications and was a driving force in the instructional technology market. It was not until the later half of the 90's that the Internet began to be considered as a suitable medium for learning in general and language learning in particular.

Upon introduction, innovative technologies have always stimulated an intense debate about their instructional effectiveness among advocates and detractors (see for example, Dreyfus 1992; Postman 1992, as quoted in Kearsley 2000, p. 137; Norman 1993; Landauer 1995). The rapidness of the deployment of computers has had a multiple impact on the degree of attendant controversy. On the one hand, it has facilitated the integration of more powerful and less expensive computers throughout the educational system. On the other hand, the continuous introduction of new devices, programs, and authoring tools in the market has left limited time to reflect on the advantages and disadvantages of the old ones, and few opportunities to integrate them at a large scale (Palloff & Pratt 1999; Yu 2000). Likewise, the formal evaluation of each innovation's worth as a didactic tool has been seriously lacking or even non-existent.

Despite these circumstances, Internet-based learning —also known as networked learning, online learning or e-learning, as it has been titled more recently— is here to stay (Inglis, Ling & Joosten 1999; Aggarwal 2000; Chong 2001; Rosenberg 2001). Administrators from all levels of instruction are considering the integration of Web-based curriculum applications in search of a solution to the multiple problems they face, ranging from the lack of qualified teachers, particularly in isolated areas or for less commonly taught languages, to limited resources for building new facilities and hiring new faculty (Daniel 1996; Roberts 2001). Consequently, Web-based courses have begun to flourish (as reported in United States

Distance Education Association 2001) not only in institutions traditionally devoted to distance education, but also in virtually all other education venues.

As teachers face increasing pressure from administrators to incorporate the Internet into instruction, a new challenge arises in their busy schedules. For many education practitioners, integration of the Internet has primarily involved the use of available primary or secondary Web sources. These sources have been used to prepare lectures or to promote critical thinking among students via collaborative activities or research projects (for example, in Crane 2000; Pasch & Norsworthy 2001).

This source-based approach to Web utilization is particularly common and useful in foreign language education, where instructors employ authentic materials to motivate students and help them build the connection between the academic subject matter and real life (García 1991; Álvarez & González 1993). Undoubtedly, the Internet is the most valuable source of up-dated realia. While the selection of sound and pedagogically-useful Web sites is not an easy task[2], the integration of Web-based activities can enhance the learning process by promoting creative interaction by students with motivating, culturally appropriate, and linguistically rich educational materials.

Other instructors have enthusiastically engaged not only in the use of existing Web resources, but also in the design, implementation, and testing of materials for the online medium. Nonetheless, the creation of sound materials for an online learning environment is a time-consuming endeavor not always recognized by educational institutions for purposes of faculty appointment, promotion and tenure.

Therefore, it is no wonder that a multiplicity of tools for the creation and implementation of Web courses and ancillary online materials to traditional courses has emerged in the market since the mid 90's. The relative novelty of these tools makes it difficult for teachers to evaluate their strengths and weaknesses, especially since research studies on these topics are still in their infancy. In order to provide some responses to the teaching community, this article reviews the nature of e-learning tools and their potential for language learning, by focusing on the key issues that surround the design, implementation, and assessment processes of Web-based language courses.

II. WEB COURSE MANAGEMENT SYSTEMS

The accelerated expansion that the Internet has experienced —in terms of number of users, content, connectivity, and new technological possibilities— since the creation of the World Wide Web in the early 90's has opened new horizons for the integration of technology into the learning process. Online learning is not the most popular use of the Web, but many Internet analysts consider e-learning as the next "killer app," agreeing with Chambers[3] when he says "the biggest growth in the Internet, and the area that will prove to be one of the biggest agents of change, will be in e-learning."

In order for the Web-based learning revolution to take place, more sound and state-of-the-art online learning materials have to be developed and implemented at all levels of instruction. Potential authors of Web materials can use independent authoring tools or employ integrated Web course management systems. These tools and systems are particularly common in academic centers in which a given platform has been purchased or developed institutionally. The following section deals with the definition, features, and development of those tools that allow the creation of integrated online learning environments.

II.1. Definition

The development of authoring tools for the creation of online materials is a very recent field in the area of software programming, with less than seven years of history. Even so, many products and packages claim to be the best e-learning solution, in an effort to reach as many potential users and enthusiasts as possible. Therefore, it is not surprising that there is no standard definition for these tools, and even less consensus about the terminology that describes these tools. Some of the most common terms include *Web course development tools* (Hazari 1998), *Web-based course support systems* (International Journal of Educational Telecommunication *1999*); *Web-based instruction programs* (Fredrickson 1999), *Web-based courseware tools* (University of Manitoba 1997; Firdyiwek 1999), *course authoring tools* and *course authoring software* (Palloff & Pratt 2001), *Web course management systems* (Mann 2000), *(Web-based) course management systems* (Ansorge 2001), *online educational delivery applications* (Landon 1996), *course delivery systems* (Brusilovsky & Miller 2001), *course delivery environments* (Kearsley 2000), *distance education systems* (Scigliano & Levin 2000), *Web-based learning systems* (Housego & Freeman 2000) or *environments* (Oakey 1999; TeleEducation NB & Centre for Learning Technologies 2000), and *courseware shells* (Norman 2000).

Furthermore, while the term *virtual learning environments*[4] can refer both to the set of tools[5] (especially in the U.K.) and to the resulting product (particularly in publications on European and Asian projects), the terms *Web-based educational environments* (Volery 2001), *online learning environments* (Schrum & Benson 2000), and *Web-integrated learning environments* (Piguet & Peraya 2000) refer primarily to the resulting product. In addition, two other recently-coined concepts *—learning management systems* and *learning content management systems*, which are primarily utilized in corporate training— (for example, in Rengarajan 2001), have increased the confusion about the scope and characteristics of these products.

For the purposes of this article, the term *Web-based course management system* (WCMS) seems to be the most appropriate terminology since the products to be discussed "are customarily grouped together, interact under a course name, and are protected by a password" and therefore, "they can be considered a system" (Mann 2000, p. viii).

From this perspective, a WCMS can be described as a platform that includes a series of integrated tools having three broad functions: (1) to create online instructional materials in the form of self-paced courses or as supplemental resources to traditional courses; (2) to manage online courses, and (3) to monitor the interaction of students with online courses.

WCMSs do not require deep knowledge of programming or designing. They are installed in a server with which both designers and end users interact online via a java-enabled Web browser. Although the range of available tools differs from product to product, WCMSs offer a set of tools for the instructor, such as a syllabus tool, a file manager, a content editor, a glossary tool, a multimedia database creation tool, and options that allow teachers to provide access and to track student use of the online materials. For the student, WCMSs include tools to facilitate communication, such as bulletin boards, electronic mail, chatrooms, and electronic whiteboards; tools for assessment like timed, automatically-graded online quizzes, self-test; and tools for submitting assignments, presenting projects, and creating homepages. In addition, students can search the glossaries and databases created by the instructor, and also make annotations in the calendar or any other content page.

II.2. Products

The first Web-based learning environments created in the early stages of the Web (1995-1996) were built without using any pre-existing software package (Kahn 1997, as quoted in Robson 1999, para. 11). Course authors were both content providers and technology developers. As Robson (1999, para. 11) points out:

> The first attempts quite naturally concentrated on transferring familiar aspects of the classroom experience to the Internet. These included the basics: communicating with students, giving tests, keeping records, and even recognizing that a student is indeed a student. Course developers built new Internet tools, such as WWW-based quizzes with immediate feedback, and re-purposed old ones, such as email and chat. This was often done on an ad-hoc basis, but some developers realized that by packaging a set of tools they could save future work for themselves and perhaps make a little money.

Less than seven years later, the situation has radically changed. There are many different WCMSs in the market —no one knows how many exist (Robson 1999; TeleEducation NB & Centre for Learning Technologies 2000)—, and as the demand for these products increases, it becomes more difficult to keep track of all the products and the new features added to them. A report by the American Society of Development and Training (2001) states that there are more than 5,000 companies that offer products related to e-learning. Most of those companies are private corporations, and none of them controls more than 5% of the market. A series of bankruptcies, mergers, and acquisitions reflects the fragility of this emerging sector and obvious consolidation trends (Barron 2001). Many online education companies have been forced to cut costs and even to leave the field. Nevertheless, other factors, such as the number of significant e-learning contracts signed in 2001 and the steady demand for e-learning products make analysts optimistic about the future of the online learning industry.

The proliferation of WCMSs is easy to justify if we consider the transformations that the knowledge-based economy is causing on the education milieu. According to Jaffee "the academy is presently facing an unprecedented range of external pressures including changes in student demographics, fiscal constraints, emerging informational and instructional technologies, skill demands from private sector employers, and conceptions of teaching and learning" (1998, p. 21). In a society where the need for lifelong learning has dramatically increased, the market for educational products is becoming highly competitive and attractive. According to Grimes (2001), the online higher education market is expected grow to $7 billion in 2003 from $1.2 billion in 1999. Corporate online training will grow even faster –from $1.1. billion in 1999 to 11.4 billion in 2003. Not surprisingly, traditional higher education institutions are increasing their online offerings in an effort to cope with competition from new "virtual" educational providers including newly funded virtual universities, corporate universities, professional associations, textbook publishers, and bookstores (Tschang 2001).

Nonetheless, while corporations may have the resources to outsource the creation and management of their training courses[6], for instance, by contracting Application Service Providers, "traditional" education institutions usually adopt the "self-made" approach when developing online learning materials. Much has been written about faculty not being willing or skilled enough to accomplish the difficult task of producing sound technology-based educational materials (for example, Duderstadt 1997; Murray 1996; Brahler, Peterson & Johnson 1999; Seltzer 2000; Janicki & Liegle 2001; Palloff & Pratt 2001). The list of reasons cited for faculty reluctance to engage in online teaching include lack of knowledge about educational concepts and/or technology, time constraints, and the lack of systems of reward and recognition.

These circumstances notwithstanding, faculty respond positively if awarded with enough support and incentives. Many universities have begun to develop new criteria to assess technology-related work done by scholars[7]. As Boschmann points out, "if rewards are based upon true scholarly activity whose products are shared, peer reviewed, published, funded, adopted, and become the basis of conferences, then sound reward decisions can be made" (1998, para. 11). In addition, other measures have been adopted to grant support for faculty. Examples include centers for teaching and learning and technology resource centers, as well as the adoption of Web course management systems, so instructors can rely on an institutional supported platform.

The decision to choose one particular Web course management system is generally made at the administration level since it implies a significant investment and a long-term relationship with the selected commercial or non-commercial provider. Institutions may support more than one platform, although the common trend is to have only one in order to ease its adoption by both instructors and students[8]. The following taxonomy of WCMSs by Brusilovsky and Miller (2001, p. 169-171) provides an excellent framework for the study of the existing authoring tools:

University-level tools	University research-level systems
	University-supported products
Commercial tools	University-grown commercial systems
	Full fledged commercial systems

Table 1: Taxonomy of WCMSs by Brusilovsky and Miller (2001)

According to Brusilovsky and Miller (2001, p. 169-170), university-level tools can be divided into two groups: *university research-level systems* and *university-supported products*. The former are usually advanced and innovative, but their distribution is limited because their developers do not offer maintenance or support services. The latter are systems also created at universities but have gone through a more thorough testing process and their developers offer a stronger level of support. Many university research-level systems become university-supported systems as a result of strong demand from the e-learning sector, specially in the U.S. and Canada.

Commercial products, such as those products called *university-grown tools* by Brusilovsky and Miller, may have originated in universities. In these cases, "the success in their home universities leads to the establishment of a company that usually ships some version of the tools as a commercial system and continues the development of this tool on an industrial basis." (Brusilovsky & Miller 2001, p. 170). *Full-fledge commercial tools* are systems produced, distributed, and supported by companies. Although the original product may have originated in an university, the connection with the original development site has disappeared.

Following Brusilovsky and Miller, many university research-level tools are more solid than the commercial ones. However, they can not offer the same level of service and user-friendliness provided by commercial software companies.

The following table[9] illustrates some of the current products that are used in the academic arena. For a comprehensive review of the features of different WCMSs, see Hazari (1998); International Journal of Educational Telecommunication (1999); Marshall University (1999); TeleEducation NB & Centre for Learning Technologies (2000); Brusilovsky & Miller (2001); Landon (1996-2001); Siekmann (2001); University of Manitoba (1997-2001); USNews.com (2001).

Type of product	Product	Developer
University-research level systems	ARIADNE	European Union and Swiss Government http://www.ariadne-eu.org
	ClassNet	Iowa State University http://classnet.cc.iastate.edu
	FLAX	De Montfort University http://www.cms.dmu.ac.uk/coursebook/flax
	IDEALS-MTS	Consortium of European Universities and Corporations http://ideals.zgdv.de
	Interbook	Carnegie Mellon University http://www.contrib.andrew.cmu.edu/~plb/InterBook.html
	ONcourse	Indiana University http://oncourse.iu.edu
University-supported systems	CyberProf	University of Illinois at Urbana-Champaign http://www.howhy.com/home
	Mallard	University of Illinois at Urbana-Champaign http://www.cen.uiuc.edu/Mallard
	Merlin	University of Hull http://www.hull.ac.uk/merlin
	TeleTOP	University of Twente http://teletop.edte.utwente.nl
	WebAssign	North Carolina State University http://webassign.net
	WebTycho	University of Maryland http://tychousa3.umuc.edu
University-grown tools	COSE	Staffordshire University / Cambridge Software Publishing. http://www.staffs.ac.uk/COSE
	Luvit	Lund University / LUVIT Corp. http://www.luvit.com
	Serf™	University of Delaware / Serfsoft.com http://www.serfsoft.com
	Virtual-U™	Simon Fraser University / Virtual Learning Environments Inc. http://www.vlei.com
	WebCT	University of British Columbia / WebCT, Inc. http://www.webct.com
	WebTeach	University of New South Wales / WebTeach Pty. Ltd. http://www.pdc.unsw.edu.au/Webteachdemo/welcome.html
Full-fledged commercial tools	Blackboard	Blackboard, Inc. www.blackboard.com
	Docent	Docent, Inc. www.docent.com
	FirstClass	Centrinity http://www.softarc.com/wwwourcompany
	Geo Learning Management System	GeoLearning.com http://www.geolearning.com
	IMSeries	Learning Technology Systems http://www.imseries.com

	Intrakal	Anlon http://www.anlon.com
	IntraLearn	IntraLearn Software Corporation http://www.intralearn.com
	IZIOPro℠	Convene http://www.convene.com
	LearningSpace	IBM Mindspan Solutions http://www.lotus.com/home.nsf/welcome/learnspace
	Mentorware	Mentorware™, Inc http://www.mentorware.com
	Net Synergy	Mentergy http://www.mentergy.com
	Saba Learning	Saba http://www.saba.com
	Symposium	Centra® http://www.centra.com
	SuccessMaker	NCS Systems http://www.successmaker.com
	SocratEase	Quelsys http://www.quelsys.com
	TBK Tracker	Platte Canyon Multimedia Software Corporation http://www.plattecanyon.com
	The Learning Manager	TLM Corporation http://tlmcorp.com/
	THINQ	THINQ Learning Solutions http://learning.thinq.com/index.htm
	TopClass	WBT Systems http://www.wbtsystems.com
	Total Knowledge Management	Generation21 Learning Systems http://www.gen21.com
	WebMentor	Avilar Technologies, Inc. http://home.avilar.com

Table 2: Web-based course management tools

As the e-learning market evolves, products from one category may move to another, while others often disappear from the scene. The number of tools continues to grow in concert with the increasing demand for high-quality, state-of-the-art Web-based courses. This relationship leads to what Fredrickson refers to as "a snowball effect": "the more courses being offered over the Web, the more Web-based instruction (WBI) programs are developed, leading to more courses on the Web" (1999, p. 67). Listings of products published only one or two years ago are already obsolete[10], and the mergers, acquisitions and constant launching of new versions with more features makes it extremely difficult for academic institutions to choose a particular system (TeleEducation NB & Centre for Learning Technologies 2000). In addition, the variety of options these tools offer are "beginning to make it difficult for instructors and course designers to determine which functions should be used for what aspects of a course" (Kearsley 1998, para. 41).

Nevertheless, descriptive and comparative studies show that the differences among WCMSs that could be of pedagogical concern are very small (Robson 1999; Siekmann 2001). There are of course variations in the tools available, design capabilities, options for quizzes and data analysis, ease of use, and information management. "Judging from reading newsgroups and from feedback obtained at conferences, perceptions about ease of use, appearance of the interface, recommendations from peers, marketing strategies, and positioning in the market have far more influence over purchasing decisions than pedagogic distinctions" (Robson 1999, para. 21).

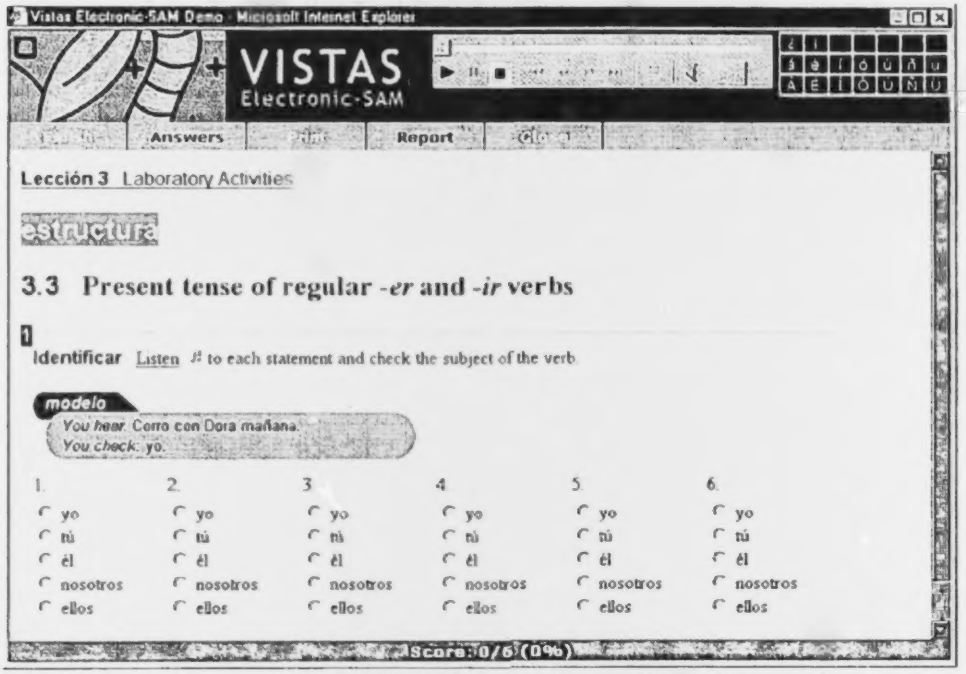
Another factor that may influence the acquisition of a given WCMS by an institution is the perception of its long-term stability in the market. Consequently, products such as Blackboard or WebCT, which are considered to be the leaders in the market[11], particularly in the higher education area, have a greater chance of being selected than other less stable tools.

III. WEB LEARNING ENVIRONMENTS IN FOREIGN LANGUAGE LEARNING

Advances in technology always occur at a faster pace than their integration into the educational field (Cuban 2000). However, there are an increasing number of Web-related research projects and papers being presented at scholarly conferences on language learning (like ACTFL, NECTFL, EUROCALL, CALICO, IALL, and even the MLA). Thus, it is clear that the Internet, especially the Web, is being enthusiastically integrated by many foreign language teachers as an instructional tool.

The general advantages and disadvantages of using the Web as an instructional tool have been described in many places (Alessi & Trollip 2001; Joliffe et. al. 2001; Rosenberg 2001). Owing to its widespread use and cross-platform compatibility, the Web facilitates access to learning to anyone, anywhere, at anytime. Surprisingly, he disadvantages stem from at least three inherent strengths of the Web: (1) its dynamism and rapid growth, which forces authors to frequently up-date their Web sites' content and layout; (2) the ease by which information can be published, which in many cases leads to quickly and, consequently, poorly designed sites; and (3) its relatively simple navigation interface, which hinders sophisticated kinds of interaction. In addition, the following negative factors, as suggested by Godwin-Jones (1999), are particularly important in the foreign language field: (1) the difficult handling of non-Roman alphabet characters; (2) the constrained quality of multimedia information; and (3) the obstacles to the incorporation of audiovisual materials.

In order to provide solutions to the specific needs of foreign language teachers, some authoring tools for Web-based language learning activities have been developed by universities or commercial companies, such as ExTemplate by Rice University or ACE II by De Wilde CBT[12]. These tools offer a seamless integration of multimedia resources and, in the case of ExTemplate, resolve the question of the non-Roman alphabet characters. Figure I shows a sample online Spanish exercise with integrated audio information, created for the textbook *Vistas*[13] using ACE II. Figure II shows an online Arabic exercise with integrated audio information and recording capabilities (via Wimba), created at Rice University using ExTemplate.


Vistas Electronic-SAM Demo - Microsoft Internet Explorer
VISTAS
Electronic-SAM
Answers
Report
estructura
modelo
Score: 0/5 (0%)

Lección 3 Laboratory Activities

3.3 Present tense of regular *-er* and *-ir* verbs

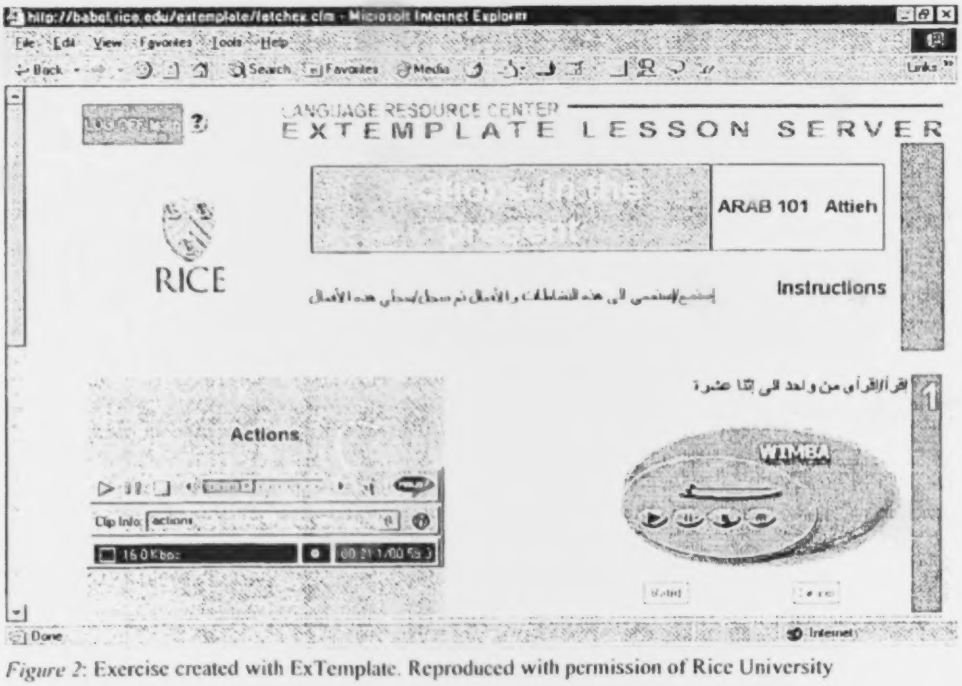
1

Identificar Listen to each statement and check the subject of the verb.

You hear: Corro con Dora mañana.
You check: yo.

1.	2.	3.	4.	5.	6.
○ yo	○ yo	○ yo	○ yo	○ yo	○ yo
○ tú	○ tú	○ tú	○ tú	○ tú	○ tú
○ él	○ él	○ él	○ él	○ él	○ él
○ nosotros	○ nosotros	○ nosotros	○ nosotros	○ nosotros	○ nosotros
○ ellos	○ ellos	○ ellos	○ ellos	○ ellos	○ ellos

Figure 1: Exercise created with ACE II. Reproduced with permission of Vista Higher Learning


http://babel.rice.edu/extemplate/fetchex.cfm - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Links
LANGUAGE RESOURCE CENTER
EXTEMPLATE LESSON SERVER
RICE
Actions
Clip Info: actions
16.0 Kbps
WIMBA
Done
Internet

ARAB 101 Attieh

Instructions إستمع/إستمعي الى هذه النشاطات و الأفعال ثم سجل/سجلي هذه الأفعال

1 اقرأ/اقرأي من واحد الى إثنا عشرة

Figure 2: Exercise created with ExTemplate. Reproduced with permission of Rice University

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Integration of the Web into foreign language curricula has been fashioned in many different ways. These optional approaches all explore one or more of the Web features as "a revolutionary new medium for organizing, linking, and accessing information" (Warschauer & Kern 2000, p. 12). By using the Web as an instructional tool, teachers try (1) to increase students' exposure to authentic materials and language-learning related activities, and (2) to motivate them to engage in meaningful communication processes and collaborative activities. In a broad sense, Web-based instruction can be defined as a conjunction of different kinds of interaction: interaction with materials, such of those selected or created by the author or other students, and interaction with people, such as class peers, the teacher or the Internet community. The greater the student interaction is, especially in technology-enhanced instruction, the more likely the learning process will be successful. (Schrupp, Bush & Mueller 1983; Palloff & Pratt 2001).

Following the taxonomy of interaction for instructional media developed by Schwier (1992), there are three levels of interaction: reactive, proactive, and mutual. Reactive interaction in Web-based instructional environments occurs when students respond to a given stimulus, for example, study materials or any other information. Proactive interaction takes place when "the learner goes beyond selecting or responding to existing structures and begins to generate unique constructions and elaborations beyond designer-imposed limits" (Schwier 1992, p. 2). In Web-based environments, this type of interaction occurs when students use retrieved information to accomplish certain goals or when they create something, for example, Web-based projects. Mutual interaction occurs in computer-mediated communication, when both sender and recipient have to adapt themselves to each other in order for communication to take place. These categories are hierarchical in that one category subsumes the characteristics of the inferior levels.

Research published on the use of Web-based instructional materials for foreign language teaching includes examples of each level of interactivity described above. Reactive models of interaction include the use of Web sites with course syllabi, study materials, and quizzes created by the instructor or by other authors (for example, in Godwin-Jones 1999; Barker 2001; Román Mendoza 2001a). Nevertheless, most studies, including those previously cited, also report activities that require proactive interactions, such as the use of Web realia to solve certain problems and develop critical thinking (as in Lee 1998; Osuna & Mekill 1998; Christie 2000; Crane 2000; Green & Youngs 2001; Pasch & Norsworthy 2001; Windham 2001). Proactive interaction has also been promoted in other creative fashions, such as the webportfolios reported by Spanos, Hansen and Daines (2001), the student Web pages project included in Labrie (2001), and the projects for the virtual study abroad described by Pertusa-Seva and Stewart (2000). Finally, mutual interaction has also been extensively employed in foreign language online instruction as a means to extend the communication beyond classroom limits (for example, in Warschauer & Kern 2000). Studies on computer-mediated communication have been performed on interactions among peers (for example, in Coski & Kinginger 1996; Lee 1998; Lamy & Goodfellow 1999; Blake 2000; Sheaffer-Jones 2000); among students and teachers (as in Coski & Kinginger 1996; González-Bueno 1998); and among students and the outside world (for example, in Austin & Mendlik 1994; Coski &

Kinginger 1996; Blake 2000; Brammerts 2001; Furstenberg, Levet, English & Maillet 2001; Knight 1994; Lunde 1990; Soh & Soon 1991).

Under ideal circumstances, a Web-based language learning environment would integrate activities corresponding to all these categories, especially if the environment targets distance learners with no "traditional" classroom contact. Also, authors of Web-based environments may emphasize one interaction type over the others depending on the content and learning objectives of the course, the Internet literacy of the course audience, and the technology available to both students and instructors.

As mentioned above, in order to create a Web-based learning environment, instructors may use independent tools or an integrated WCMS. The use of independent tools and programming languages offers more freedom and customization possibilities for both the instructor and the student. In addition, Godwin-Jones observes that the use of WCMSs may cause educators to believe that what the system "offers is all the Web can do and may not explore innovative options" (1999, p. 57). Therefore, it is not surprising that one of the most common items in the "wish list" of WCMS users is more flexibility in the potential for integrating other learning modules and tools. Such flexibility would allow for a deeper degree of customization and for a higher adaptability to the teacher's instructional approach.

The use of WCMSs has many advantages, especially for the novice author of Web-based instructional materials. Following is a list of additional benefits that characterize WCMS-based learning:

- Ease in publishing online materials without extensive knowledge of HTML.
- Ease in creating quizzes, surveys, and other activities with immediate scoring and feedback without knowledge of programming.
- Easy registration for students.
- Ease of management of password-protected access to the course.
- Ease in creation of asynchronous fora.
- Automatic recording of synchronous chats.
- Layout consistency throughout the course.
- Integrated tracking and monitoring capabilities.

WCMSs are currently being used to deliver different modalities of online materials: totally-developed, dependent, supplemental, and informative (Román Mendoza 2001a). The conclusions of Gandel, Weston, Finkelstein and Winer (2000) of Web use are useful for categorizing the impact of WCMS on student learning:

1. WCMS-delivered materials with **minimal** impact on learning.
2. WCMS-delivered materials that are **supplemental** and not necessary to the achievement of course goals.
3. WCMS-delivered materials that are **integral** to achieving some goals of the course.

4. WCMS-delivered materials that are **central** to the achievement of most learning goals of the course.
5. WCMS-delivered materials that are **exclusive** to the achievement of all learning goals in the course.

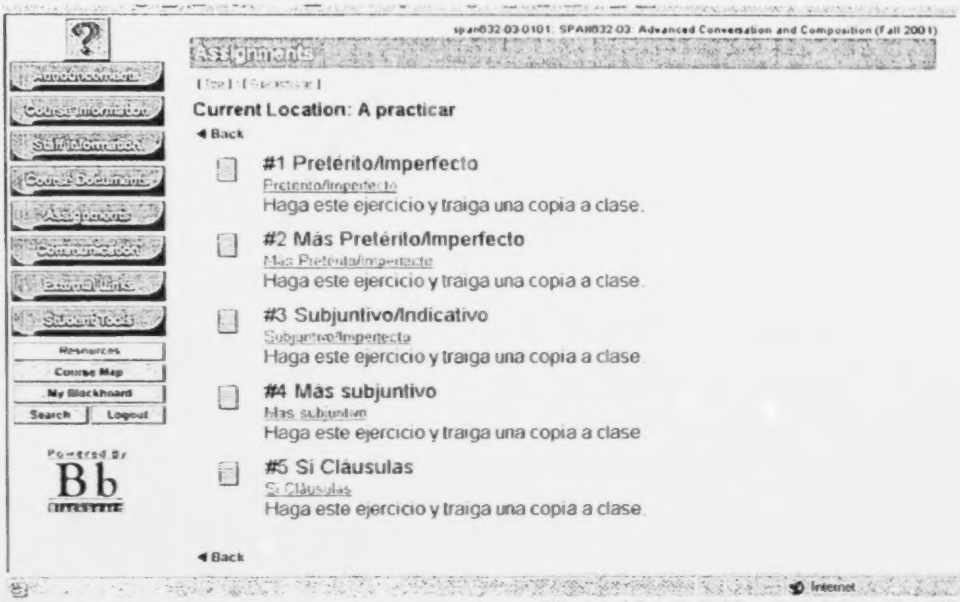
Owing to the relative novelty of the integration of WCMSs in language learning and the scarcity of published research studies, it is difficult to assess what percentage of Web-based language instruction belongs to each of the five previously described categories of WCMS use. Information retrieved from the Web and from presentations at scholarly conferences seems to indicate that most language teachers use WCMSs to create and deliver integral or supplemental materials. Central and exclusive uses of the Web via WCMSs are naturally more frequent in distance education contexts. In addition, research shows (as in Chen & Huntsberger 2000/2001) that Web-novice teachers tend to use the Web to present information and to create passive activities with limited space for individual instruction. Web-knowledgeable teachers provide collaborative instruction, and more flexible and challenging interactive materials.

In general, authors involved in the creation of Web-based materials approach the task in an incremental way, i.e., building on prior experience and making changes based on their previous instructional experience with the medium. For this reason, it is very common that teachers who first employ the Web in a minimal or supplemental way, progress afterwards to a more integral, central and even exclusive use of the Web in their courses. Flexible and customizable WCMSs are the most convenient tools for teachers who want to begin to explore some of the different interaction possibilities that online learning environments provide. The following description aims to illustrates some applications of the most common tools of WCMSs in foreign language instruction, in terms of what students can be asked to do. Each description will be enhanced with some considerations about foreseeable problems and possible solutions.

III.1. Content Tools

Most WCMSs include in this category the following options: a syllabus tool, a calendar tool, and the content pages. Glossaries and multimedia databases are not present in all products but they will also be discussed in order to provide a better picture of the possible integration of this group of tools. To a degree, these tools function as "an electronic assistant to the teacher" (Christie 2000, p. 152).

Educators can use these tools to post syllabi, course instructions and schedules, study guides, class handouts, reference Web sites and materials. They can also be used to announce class assignments and course changes. These types of tools promote reactive interactions (basically, student interaction is limited to reading and selecting) more than any other interaction level. However, some WCMSs allow students to become more proactive by allowing them to annotate the content pages, the course glossary and the calendar. Figure 3 shows a sample use of the widely-used WCMS Blackboard for delivery of supplementary grammar handouts and exercises for a Spanish Conversation and Composition course taught during the fall semester 2001 at the University of New Hampshire. This course also made extensive use of the synchronous communication tools to encourage student communication outside the classroom.



span032-03-0101: SPAN032-03: Advanced Conversation and Composition (Fall 2001)

Current Location: A practicar

#1 Pretérito/Imperfecto
Pretento/Imperfecto
Haga este ejercicio y traiga una copia a clase.

#2 Más Pretérito/Imperfecto
Más Pretérito/Imperfecto
Haga este ejercicio y traiga una copia a clase.

#3 Subjuntivo/Indicativo
Subjuntivo/Imperfecto
Haga este ejercicio y traiga una copia a clase.

#4 Más subjuntivo
Más subjuntivo
Haga este ejercicio y traiga una copia a clase

#5 Si Cláusulas
Si Cláusulas
Haga este ejercicio y traiga una copia a clase.

Figure 3: Grammar content module. Advanced Conversation and Composition by Lee (2001) Blackboard. University of New Hampshire

Whatever information will be made available to students, it is necessary to plan in advance how that information is going to relate to the course. As Gala points out after using the WCMS CourseInfo for a survey course in Spanish Literature, it is important to explain to students the role any supplementary information plays "in the course and what they are expected to do with it" (2000, p. 158). This is important in order that students do not feel overwhelmed or confused by the amount of materials accessible in the online learning environment.

III.2. Communication Tools

The most common tools in this category are the bulletin boards and the chatrooms. Due to their potential for increasing student-student communication and for facilitating mutual interaction, these tools are the most frequently used in foreign language instruction. There are important reasons why online discussion tools should be used for instruction. According to Wizer (1997), these reasons include: (1) limited classroom time; (2) contributions to the

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discussion can be stored for further analysis; (3) learners have more time to reflect on their own answers and their peers' answers; (4) teachers have more time to reflect on students' answers; (5) the process of learning becomes more active and learner driven; (6) discussions tend to be more open and less restrained; (7) group members may participate more equally; and (8) discussions take place in an individualized, interpersonal, and interactive environment. While the first four reasons are generally accepted without any further objections, the last four advantages depend on how well online activities are designed and integrated into the course.

Before implementing online discussion tools into a course, it may be very helpful to consider a series of issues related to: course topics, student participation, teacher participation, and student assessment. The following paragraphs contain a list of issues that are not intended to be a comprehensive guide, but rather a preliminary guide for faculty use of online discussion tools in their courses.

- *Course topic.* Instructors have to plan in advance how online discussions are going to relate to specific course topics. Activities may include reading or commenting on postings before, during or after the class. In addition, online discussion tools are very useful in carrying out group work because they allow students to use private bulletin boards or chatrooms to prepare and brainstorm for their projects without being tied to a particular place.

- *Student participation.* It is important to specify in the course syllabus if student participation in online discussions is going to be required or simply encouraged. Instructors have to be very clear about the frequency with which students will have to participate in discussions. Activities should be set up so that they promote both student-student and student-teacher mutual interaction. To this end, script-based activities —exercises in which students have to gather information from previous online discussions or chats in order to perform the task (such as the "chain comments" reported in Spanos et al. 2001)— are extremely successful in ensuring student involvement in the discussions, and in after-discussion activities.

- *Teacher participation.* It is very important for instructors to be aware of the amount of time they are going to be able to spend reading the postings of students. Depending on the class size, instructors will decide what kind of feedback they are going to give their students. The clearer the instructions on how and why to use the selected discussion tools are, the less time the instructor will spend answering individual questions on those issues. Feedback can be provided individually via e-mail through a draft/revision approach, or in-person to the whole class, focusing on the most frequent problems encountered.

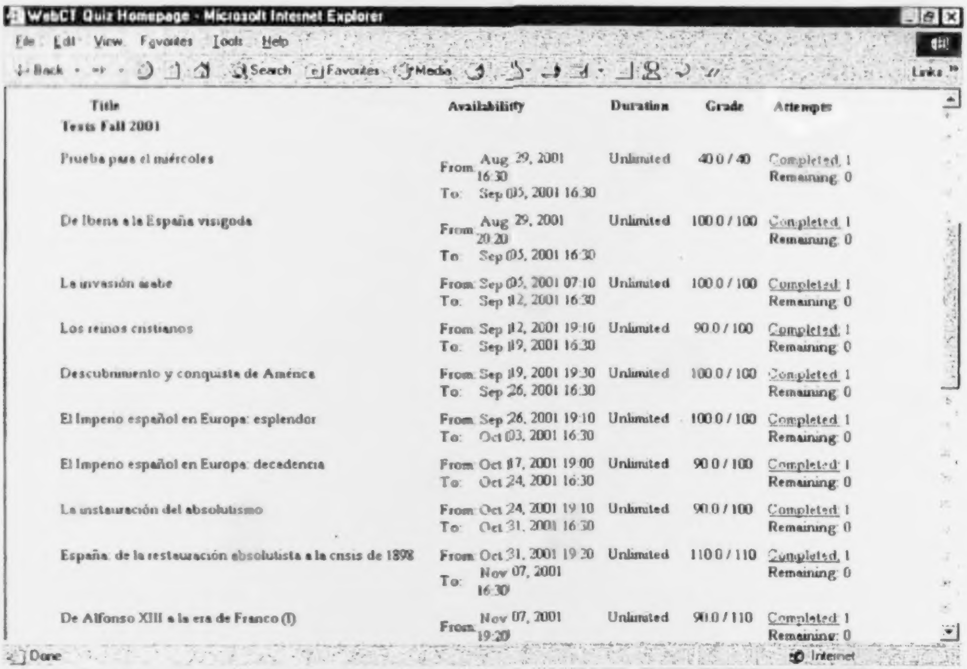
- *Assessment of online contributions.* As Gala states (2000, p. 159), "in an ideal world, students would engage freely in these exchanges and not view them as mere homework but rather as educational opportunities." Since most learning contexts are not part of that "ideal world," the grading of contributions to online discussions seems to be the only way to ensure student participation. The issue of how to assess student postings and provide feedback must be carefully considered by the instructor. Grading scales and rubrics for assessing other types of written and oral communication may prove inappropriate for an online environment (see Spanos et al 2001, for a practical use of Angelo's Classroom Assessment Techniques to evaluate different types of online activities).

Some WCMSs include other tools, such as the student presentation tool and the homepage tool in WebCT, which allow students to establish one-way communication with their peers and the teacher. These tools can be particularly useful for collaborative editing and for publishing group projects in any courses, promoting creative proactive interaction.

III.3. Assessment Tools

Under this category, quizzes, self-assessment tools, and assignment submission options will be discussed. Quizzes and self-tests may take different forms, such as multiple choice, fill-in-the-blanks, matching, short paragraphs, or long answers. As with any other kind of computer-assisted evaluation tools, the broader the range of possible answers, the more time-consuming and difficult will be the provision of individualized feedback and assessment. Nevertheless, online automatically-graded quizzes remove much of the burden of manual grading from instructors. Additionally, these tools allow learners to monitor their progress on an on-going basis (Jolliffe, Ritter and Stevens 2001).

Assessment tools can be used for some of the mechanical work required in many foreign language learning contexts, such as spelling exercises, grammar drills, or preparative questions for a culture or literature test (for example, in Christie 2000; Román Mendoza 2001a). Quizzes may serve as a review of what has been discussed in class or as preparation for the next class. Figure 4 shows a partial list of quizzes that students had to take in the Spanish Civilization and Culture course taught at George Mason University during the fall semester of 2001. In this case, the purpose of quizzing assure that students had read the textbook chapters[14] before each class and were prepared for the discussion. This approach can also help to identify problematic questions and topics in advance so they can be addressed during class time.


WebCT Quiz Homepage - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Links
Done
Internet

Title	Availability	Duration	Grade	Attempts
Tests Fall 2001				
Prueba para el miércoles	From: Aug 29, 2001 16:30 To: Sep 05, 2001 16:30	Unlimited	40.0 / 40	Completed: 1 Remaining: 0
De Iberia a la España visigoda	From: Aug 29, 2001 20:20 To: Sep 05, 2001 16:30	Unlimited	100.0 / 100	Completed: 1 Remaining: 0
La invasión árabe	From: Sep 05, 2001 07:10 To: Sep 12, 2001 16:30	Unlimited	100.0 / 100	Completed: 1 Remaining: 0
Los reinos cristianos	From: Sep 12, 2001 19:10 To: Sep 19, 2001 16:30	Unlimited	90.0 / 100	Completed: 1 Remaining: 0
Descubrimiento y conquista de América	From: Sep 19, 2001 19:30 To: Sep 26, 2001 16:30	Unlimited	100.0 / 100	Completed: 1 Remaining: 0
El Imperio español en Europa: esplendor	From: Sep 26, 2001 19:10 To: Oct 03, 2001 16:30	Unlimited	100.0 / 100	Completed: 1 Remaining: 0
El Imperio español en Europa: decadencia	From: Oct 17, 2001 19:00 To: Oct 24, 2001 16:30	Unlimited	90.0 / 100	Completed: 1 Remaining: 0
La instauración del absolutismo	From: Oct 24, 2001 19:10 To: Oct 31, 2001 16:30	Unlimited	90.0 / 100	Completed: 1 Remaining: 0
España: de la restauración absolutista a la crisis de 1898	From: Oct 31, 2001 19:20 To: Nov 07, 2001 16:30	Unlimited	110.0 / 110	Completed: 1 Remaining: 0
De Alfonso XIII a la era de Franco (I)	From: Nov 07, 2001 19:20	Unlimited	90.0 / 110	Completed: 1 Remaining: 0

Figure 4: Quizzes for the course Spanish Civilization and Culture by Román Mendoza (2001b) WebCT. George Mason University

In addition to all considerations involving each of the previous categories, attention must also be given to the technological skills of the students, including their individual and collective familiarity with the tools used for a particular course. Instructors must be aware of the specific technological skills students will need in order to perform well in the online assignments. Instructors should also know where to refer students who do not have the necessary skills and how long it will take them to acquire those skills. Alternatively, some teachers devote one or two classes to teach students how to use the required tools (as in Lee 1998). In some cases, some level of proficiency in technology should in fact be a requirement for the course. Finally, it is also important to know how many, and to what degree, students have Internet access from home.

IV. ASSESSING EFFECTIVENESS

As seen above, designing and implementing a sound online language learning environment involves time-consuming processes in which many instructors do not want to actively participate. This reluctance emanates in part from their desire to collect valid data about their effectiveness as learning tools. Furthermore, although many sources state that the possible reduction of costs does not have to be the main reason for adopting technology, administrators are more willing to support projects if return on investment can be proven. Reported results from two pilot projects founded by the Sloan Foundation at the University of Illinois at Urbana-Champaign and by the Pew Program in Course Redesign at the University of Tennessee, Knoxville, (Arvan & Musumeci 2000; Roberts 2001) are very encouraging with respect to the achievement of cost reductions through the integration of technology into the curriculum. In both cases, demand for intermediate Spanish courses exceeded the enrollment capacity. Consequently, an online component[15] was added to the regular courses, thus decreasing the number of weekly class meetings, and increasing the number of sections offered. Therefore, by using technology, the University of Illinois was able to double its enrollment, and the University of Tennessee offered one-third more courses, with a cost-per-student reduction from $109 to $30.

Studies on the effectiveness of online learning environments are very scarce. Regarding the use of WCMSs, Robson reported in 1999 that "there are practically no data at all, meritorious or not" (para. 21). Two years later, the situation has not significantly changed. Although there has been an increase in publications about the development and implementation of WCMSs in foreign language instruction (for example, Godwin-Jones 1999; Christie 2000; Gala 2000) and about students' attitudes toward them (for example, Felix 2001; Román Mendoza 2001a; Yang 2001), there is still a lack of definitive and reliable results on the effectiveness of WCMSs as instructional tools. Even if more research demonstrating the enhancement of student achievement through online instruction were available, it would have to be carefully reviewed due to the inherent difficulties of studies concerning pedagogical approaches, treatments, and solutions. As Joy and Garcia (2000) report, design flaws (e.g., sample size, selection of control groups, control of prior knowledge, ability, learning style, teacher effects, time on task, instructional method, and media familiarity) are very frequent in studies involving the use of technology.

Nevertheless, there are other factors that appear to indicate that the use of Web-based learning environments can be beneficial for the learning process. These alternative factors are particularly more evident in situations where enrollment limitations or geographical conditions impede student interaction with their instructors, their peers, and course materials. As Alessi and Trollip suggest, many advantages of Web-based learning are related to logistics since the online learning environments "are more convenient, inexpensive, efficient, accessible, reproducible, or maintainable" (2001, p. 378).

Quality issues, however, are not to be forgotten. Following Jolliffe et al., evaluation of online instruction should focus on the following three pedagogical aspects: "the learning that has taken place, the learning materials, and the learning environment" (2001, p. 262). The exact scope of the evaluation methodology depends, also according to Jolliffe et al., on the goals of the evaluation, which can be any of the following (2001, p. 270):

- The learning gains of the students;
- How effective learners found the online environment;
- The changes that may have to be made to the learning materials;
- How effective learners found the learning support;
- The advantages and disadvantages of online delivery;

- The appropriateness of the environment structure for learning;
- The most and least effective learning processes in the online environment;
- How the online environment compares with the traditional environment.

Questionnaires, observations, and data retrieved from the automatic tracking system of WCMSs are the most common tools for gathering the data necessary to perform a solid evaluation. Questionnaires models (for example, Angulo & Bruce 1999; Felix 2001; Green & Youngs 2001; Jolliffe et. al. 2001) can serve as a starting point for the development of the right tool for a particular study. Experiments must be designed with a view to avoiding flaws to obtain accurate and reliable data (see Joy & Garcia 1998, for references about sound research design and data reporting).

V. FINAL REMARKS

The introduction of online learning environments in foreign language instruction is affecting the way teachers approach the development and implementation of their courses. As Nasseh points out, "the role of teacher from traditional knowledge provider has changed to facilitator, helper, technology expert, and problem solver" (1998, para. 45). In addition, some instructors have also undertaken the task of designing and maintaining the environment in which the learning process takes place. Educators have the option of utilizing independent tools or any of the many commercial and non-commercial Web course management systems that currently abound in the market.

The use of an integrated system facilitates the development and re-use of course materials. Nonetheless, a higher degree of customization would be desirable to provide for more flexibility and to satisfy both students' and teachers' needs. Tracking utilities provided by WCMSs help teachers to assess the usefulness of their Web pages and to make the necessary modifications in the development of future courses. Since the establishment of Web-based learning environments generally occurs in a gradual fashion (through a long process of development, implementation, revision, and refinement), tools that allow seamless integration of new course elements into the existing ones are highly valuable for course developers. Integrated WCMSs are also more likely to produce robust and consistent products, less subject to technical problems.

In terms of student benefits, the use of a sound Web-based learning environment, with well-prepared activities explicitly related to the course goals, can enhance students motivation in communicating in the target language, and in establishing more meaningful mutual interaction with peers, instructors, and the outside world. Data about these interactions are easily stored and retrieved for future use by the student-author, other students, and by the teacher. Thanks to these features, WCMSs represent new horizons for designing student activities based on contributions to online discussions and on their performance on online quizzes.

Finally, a thorough evaluation process of any online learning experience is strongly encouraged. Ongoing evaluation will help to ensure the achievement of learning goals and the enhancement of materials in future course releases. It will also provide valuable data for motivating and helping other members of the teaching community to accomplish the task of creating sound Web-based environments for foreign language learners.

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NOTES

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[1] For more information on Internet trends and statistics see NUA (http://www.nua.ie/surveys/how_many_online/index.html). NUA's statistics are based on research studies carried out by NUA, IDC, Reuters, Nielsen NetRatings, AIMC, IntelliQuest, CommerceNet/Nielsen.

[2] For selection criteria for primary web sources for foreign language learning see Pasch & Norsworthy (2001).

[3] John Chambers, CEO, Cisco Systems. From his keynote speech to the Fall 1999 Comdex Trade Show, Las Vegas, November 16 1999. Quoted in Rosenberg (2001, p. xv).

[4] The term *virtual learning environments* is also being used (as in Von der Emde et. al. 2001) to refer to online domains in the form of MOOs and MUDs, which allow synchronous interaction among teachers and students.

[5] The term *managed learning environments*, also referred to as *managed learning environments*, is also of widespread use in the U.K. to describe environments that include "integrated links to management information systems, content repositories and network/user authentication systems." (University of Bristol 2001)

[6] It is difficult to estimate how much the development of an online course can cost, because it depends on the kind and amount of information, and the level of interaction needed. Norman (2000, p. 118) mentions as much as $40.000 per course. Corporate reports and white papers go much higher, e.g. in Schooley (2001, para. 7): "course conversion costs are about $25,000 and up for a two-hour course. […] A new course of similar length costs more than $65,000."

[7] See, for example, Coppin State College's guidelines: http://www.coppin.edu/oit/tech_fluency.asp or Mount Holyoke College's at http://www.mtholyoke.edu/committees/facappoint/guidelines.shtml

[8] After a survey carried out within the listserv AAHESGIT in March 2001, Ansorge (2001) reports the following results: out of 178 respondents, 60% indicated there was one platform installed at their institution with 30% indicating a presence of two systems. There were 10% indicating they had three or more systems.

[9] This list is based on the taxonomy proposed by Brusilovsky and Miller (2001) and has been updated with data from the Usnews' report (2001), TeleEducation NB &Centre for Learning Technologies (2000), Mann (2000), and web research performed by the author. Some of the systems, leaders in corporate e-learning, listed in the Usnews' report have not been included because they do not currently provide service to any K12 or higher education institution.

[10] For instance, some of the systems cited by the above mentioned sources have been acquired by other companies (as Web Course in a Box by Blackboard, Inc in spring 2000), or have not been further developed (as WebFuse) or supported (as eWeb or Zebu by Centrinity).

[11] The above mentioned survey performed by Ansorge (2001) reports the following results with respect to most used WCMSs: Out of 178 respondents, 52% were using Blackboard; 32%, WebCT; 3%, eCollege; the rest

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mentioned other systems such as Learning Space. IntraKal, The Learning Manager, Etudes from Jamboa Publishing. Speakeasy. Lotus Notes. Prometheus, and Jenzabar.

[12] For more information consult http://babel.rice.edu/extemplate/index.cfm and http://www.dewildecbt.com.

[13] Donley, P. M, Dellinger, M. A. García, M. I. Blanco, J. A. & Horwitz, E. K. (2000). *Vistas*. Boston, MA: Vista Higher Learning.

[14] Kattán-Ibarra, J. (1995). *Perspectivas culturales de España*. Lincolnwood, IL: National Textbook Company.

[15] Blackboard was the tool used in University of Tennessee, Knoxville. University of Illinois implemented Mallard.

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From Rooms to Environments: Techno-short-sightedness and Language Laboratories

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ABSTRACT

Language laboratories have played a major role in the history of foreign language teaching. However, when regarding their presence in modern post-20th century foreign language teaching and learning, it is difficult to find in the profession a close adherence to the concept of *language laboratory* (Howatt 1984). As a succinct explanation, it has been argued that with the rise of Communicative-based Language Teaching they were neglected and became a useless technology. In this position paper we will discuss the role of language laboratories in retrospective, paying attention to the technology diffusion process which accounted for their initial success, and contributing arguments for a revision of their historical evolution into a new tool for learning and teaching foreign languages.

The notion of *techno-short-sightedness* will be used to describe the process of diffusion and *media* adaptation of the language laboratory technology to the latest language learning paradigms.

The article includes a survey of existing language laboratory technologies as well as a taxonomy based on their functions and information delivery systems.

KEYWORDS: Language laboratory, technology, foreign language teaching and learning, education technology, CALL, paradigm

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I. LANGUAGE LABORATORIES IN RETROSPECTIVE

The American Heritage Dictionary of the English Language, Fourth Edition (2000), defines *laboratory* as a room or building equipped for scientific experimentation or research and, in the next entries, as a place where drugs and chemicals are manufactured; a place for practice and observation. In turn, *language laboratory* is defined as a room designed for learning foreign languages and equipped with tape recorders, videocassette recorders, or computers connected to monitoring devices enabling the instructor to listen and speak to the students individually or as a group.

Despite the publication date of the dictionary, the definition appears dated. This notion of a language laboratory has remained unchallenged for almost four decades since Edward M. Stack's *Language Laboratory and Modern Language Teaching* (1960), the first major academic work on the once emerging technology, was published. Nonetheless, it is a fact that years before that, the United States Navy in 1943 and Kiddle's work in Michigan in 1949 (Howatt 1984:219) had already paved the way for the common, basic layout of the language laboratories which were to become mainstream in major education institutions in the 60s and which served as the model for the language laboratory of the second half of the 20th century, that is, *the* language laboratory defined above.

The spread of language laboratories ran parallel with the success of the audio-lingual method, which in turn largely derived from Fries's structural approach. This methodological connection was, later on, to win language laboratories a bad reputation. In essence, language laboratories were instrumental in complying with Fries' hierarchical model of applied linguistics (Howatt 1984:267). In this model language laboratories had to perform a crucial, although highly subordinate, role. Linguists were those responsible for the scientific description of languages. Later, applied linguists would take over and start preparing the teaching materials after careful selection, organization and gradation of *structures*. These materials constituted the very essence of the whole process where it was mandatory that they were not altered in any way. It is apparent that the language laboratory performed a very significant role in this practice as it stood out as mediator between teachers and students. Given this state of affairs, it is no wonder that the failures of the audio-lingual methodology soon became associated to the mishaps of language laboratories. After all, machines have not complained so far about the blames we have historically put on them.

Curiously, in the post-method era (Richards 2001, Rodgers 2001) this bad reputation lingers on. One still finds some rusty resistance to the somewhat platonic, *de passé* notion of language laboratories. On the University of Duke Language Laboratory webpage we can read the following:

> The language labs have come a long way since the early sixties. The equipment was large and cumbersome and would seem prehistoric today. There was only a reel-to-reel tape facility, and the only thing the faculty was able to do was to buy tapes that put the students to sleep with repetitive skills. The cubicles were like kennels, and the students were like Pavlov's dogs. There were house rules-NO TALKING, NO VISITING- and students were not to have fun in the labs. They were to do their drills and get out. The teachers rarely came in.

Using Kenneth Pike's Tagmemics terminology and foundations, it seems to us that the observer/ writer's perspective of the phenomenon is, to say the least, too focused on the particles, that is, on the discrete, individual items which make up the whole picture, forgetting other more complex perspectives such as their interweaving and the *field*, more holistic appraisal of the situation. However biased, it is an interesting excerpt as it encompasses much of the disregard and distaste which language laboratories have produced over decades. The semantic prosody of the whole paragraph is more than negative. Kennels and dogs combine here with descriptive adjectives such as prehistoric, cumbersome and repetitive. The actions portrayed are far from the academic world which is supposed to shape everyday life in universities or higher education centres: buy, put to sleep, have fun and get out. Finally adverb phrases are restrictive in nature. Unfortunately, the picture is too subjective to be reliable in any way. Language laboratory enthusiasts at the time might have written the following:

> The equipment is impressive and uncommon according to existing standards. Fortunately, we have a reel-to-reel tape which students and teachers can use. What's more, teachers have the chance to select the materials they feel are most appropriate to teach foreign language using the most updated technology. Another interesting feature is that students are isolated and can work at ease in a secluded environment. The room has been designed to facilitate learning and hard work. However, let us face it, technology-shy staff rarely come in.

However zealous this description may be, it would not change a bit the very nature and essence of language laboratories, which brings home to us the importance in any field of human activity of an experienced press agent: the problem with language laboratories at one point might have been the impossibility to separate clearly message from messenger, that is, the audio-lingual methodology from the potential and obvious benefits of a particular technology.

Considering the picture by the people at Duke, one is tempted to think that language laboratories have been a failure. Erben and Bartlett (1997) say they were, put it mildly, unsuccessful in grasping educators' interest. In hindsight, we can see how language laboratories as described by Stack (1960) or Hayes (1968) have failed to become a necessary tool for the teaching of languages, a *must* for teachers and material designers alike. The cassette, for example, has not. Even nowadays when CD prices have dropped drastically, the cassette is still there, demanded by teachers and manufactured by publishers, probably afraid of losing the favour of instructors if they are, all of a sudden, forced into using a CD. As a token of this denial, we can see how Paul Saettler's *The Evolution of American Educational Technology*, a seminal work on educational technology, *de facto* neglects the importance of language laboratories by devoting no more than a paragraph to their existence. So, where did language laboratories get it wrong?

As pointed out above, language laboratories became associated with restrictive teaching practices of the type Davies (1997) has called *battery chicken syndrome*, or the more orthodox *pattern practice* tag. Hayes (1968) is an excellent example of the audio-lingual dogmatism of the 60's:

> But recent years have witnessed a shift of emphasis in language teaching and learning (...) This shift of emphasis is paralleled by recent advances in linguistic science and allied fields, which have contributed to a new view of language and language learning (...) Central to this view is the observation that understanding and speaking are to a large extent matters of habit, rather than matters of knowledge. The only known way to form habits is through practice (p. 14).

Stack (1960:3) makes it clear to the readers of his manual that "the only realistic purpose of the language laboratory is to provide a convenient means of hearing and responding to audio-lingual drills". Loud and clear: no room for other ranges of activities. This was just typical at the time. Stack himself, when discussing retracing facilities in language laboratories, mentions the role of machine-teaching technologies as understood in the sixties:

> In machine-teaching techniques, it is axiomatic that a student should not advance a step until he has mastered the previous one. Each step is called a frame, and if a student does not succeed in a frame, a teaching machine will automatically provide remedial work (5).

Davies (1997) has stated that language laboratories fell out of favour for three sets of reasons. First, the implementation of language laboratories presented important deficiencies including lack of new ideas, materials and training. Second, the very notion of *control* soon lost its appeal. Finally, affective factors such as user-unfriendly gadgetry and a dehumanised conception of classroom organization may have also contributed to a situation where the costly laboratory was simply not in the agenda of language educators and school managers. But well before this picture, the language laboratory was regarded as a very valuable tool.

II. THE EMERGENCE OF A TECHNOLOGY

Although the term *language laboratory* was coined by Ralph Waltz in 1930 (Hocking 1964), and it had probably been around for a long time before being recorded, such a facility was best known as *phonetics laboratory* until the years that followed World War II. The modern language laboratory was someway *officially* born in 1946 when labs at Louisiana State University and the University of Lava in Quebec City were set up (Hocking 1964). This coincided with the emergence of the so-called Language Laboratory Movement, which was responsible for the big success that these facilities underwent in the following decades. Much has been written about the rise and fall of the language laboratories in the sixties and the seventies and, very likely, many of the readers of this article will have seen themselves empty classrooms where it is not possible to teach languages within a communicative framework because it was decided to set up a laboratory there. Once, the story was written quite differently. See the following excerpt from Tripp and Roby (2001):

> The history of the language laboratory in the first years following the NDEA[1] has been written by Parker (1961), Hocking (1964), and Diekhoff (1965). There was an explosion in the number of facilities, thanks to generous federal support: $76 million in matching funds by 1963 (Diekhoff, 1965). By 1962 there were approximately 5,000 installations in secondary schools (Hocking, 1964). Another 1,000 secondary schools had labs by 1964 (Diekhoff, 1965). This represents a thousand fold increase in the number of labs at the secondary level from 1958! Most of these were in medium-to-large school

> districts (Godfrey, 1967). Although colleges and universities were not eligible for equipment funds under the NDEA, they were caught up in the national enthusiasm for language study, and thus committed their own monies to labs. By 1962 there were 900 labs in higher education (Hocking, 1964). More postsecondary labs were built from 1965 when matching funds became available under Title VI-A of the Higher Education Act (Ek. 1974).

National enthusiasm, funding and a political drive behind. Let us admit that, so far, no other language-related technology has been so straightforwardly supported in any way, except for the Information and Communication Technologies (ICTs) boom in the late nineties. However, leaving politicians and funding aside, there is a question which still appeals the interest of Foreign Language Teaching (FLT) professionals: how can a technology equally motivate and be held off with such intensity? We find that there are two sets of reasons that may tentatively answer the above.

II.1. The Effects of Technology

First, there seems to be a significant consensus over the appeal and positive influence of technology on L2 learning. In this sense, several researchers have pointed out language laboratory technologies as means of enhancing the acquisition of a foreign language (Allen 1960, Chomei & Houlihan 1970, Ely 1984). As an illustration of a wider scope of analysis, in the US Department of Education[2] Forum one could read the following:

> Successful technology-rich environments generate impressive results for students, including improved achievement; higher test scores; improved student attitude, enthusiasm, and engagement; richer classroom content; and improved student retention and job placement rates. Of the hundreds of studies that show positive benefits from the use of technology, two are worth noting for their comprehensiveness. The first, a U.S. Department of Education-funded study of nine technobgy-rich schools, concluded that the use of technology resulted in educational gains for all students regardless of age, race, parental income, or other characteristics. The second, a 10-year study supported by Apple Computer, Inc[3], concluded that student provided with technology-rich learning environments 'continued to perform well on standardized tests but were also developing a variety of competencies not usually measured. Students explored and represented information dynamically and in many forms; became socially aware and more confident; communicated effectively about complex processes; became independent learners and self-starters; knew their areas of expertise and shared that expertise spontaneously.'

These findings are consistent with both Warshauer's (1996) notion of students' empowering and key motivational aspects regarding foreign language instruction, including (a) the novelty of working with a new medium (Fox 1988), (b) the individualized nature of computer-assisted instruction (Relan 1992), (c) the opportunities for learner control (Hicken et al., 1992; Kinzie et al. 1988; Pollock and Sullivan 1990; Williams 1993), and (d) the opportunities for rapid, frequent non-judgmental feedback (Armour-Thomas et al., 1987; Waldrop 1984; Wu 1992). Additionally, in a 1994 Software Publisher's Association (SPA) study[4], research showed that:

- Educational technology has a significant positive impact on achievement in all subject areas, across all levels of school, and in regular classrooms as well as those for special-needs students.
- Educational technology has positive effects on student attitudes.

- The degree of effectiveness is influenced by the student population, the instructional design, the teacher's role, how students are grouped, and the levels of student access to technology.
- Technology makes instruction more student-centered, encourages cooperative learning, and stimulated increased teacher/student interaction.
- Positive changes in the learning environment evolve over time and do not occur quickly.

But technology is not always a plus for educators. In the field of computer-mediated instruction, there exist non-supporters of CALL who contend that the impact of technology on students' progress in learning a foreign language is scanty. The fact is that research is inconclusive at some points. In general, research has been focused on the use of particular software programs and the development of skills such as listening or reading. Tchaïcha (1999: 297), just to cite one of these efforts, found that the students in elementary language courses did not benefit a great deal from using certain types of technology separately or in concert with other practice or input. It seems that doubt is a safe territory to stay as far as technology is concerned.

There is no doubt that technology in FLL has sparked an interesting debate in the profession over the uses and benefits of its implementation. Going back to language laboratories, it is easy to recognise McLuhan's famous quotation "Whenever a new medium comes in, it takes its initial content from the old" (McLuhan, 1964, p. 16) in much of the controversy that aroused from the initial implementation of language laboratories. As with video capabilities or the Internet these days, there was, especially in the sixties, a surge of enthusiasm for this new technology, and accordingly unreal expectations were never met and dissatisfaction got in the way. In many ways, it resembles the anxiety-provoking effect that learning a new language poses on a certain group of students. Initially very few are put off but, as negative experiences start to appear, research shows that a third of the students are likely to experience Foreign Language Anxiety.

II.2. Motivations

It is interesting to note that the very reasons that supported the Language Laboratory Movement in the sixties hold true nowadays for the growing interest in ICTs. Let us examine some of the most influential and surely farthest-reaching ideas which endorsed the aforementioned movement.

At the time, it was prestigious for an educational institution to have a language laboratory, not only because technology was implied but, more importantly, because the military used it and promoted it, both intensive and extensively. As a matter of fact, *technology* has a positive flavour which, anthropologically speaking, entails the acquisition and compilation of a body of knowledge available to a society that is of use in (1) fashioning implements, in (2) practicing manual arts and skills, and in (3) extracting or collecting materials. As a matter of fact, language learning could not afford to miss such an opportunity to explore unfamiliar territories as far as formal instruction was concerned. In this respect, Marqués (2001) has pointed out that society has always pushed educators and institutions towards adaptive-behaviour in changing scenarios.

In the forties, the widespread use of the language laboratory was actually a major breakthrough in technology applications to language learning. This is even more evident when one examines the contents of Stack (1960) and Hayes'(1968) manuals which, at a rough estimate, devote half of their pages to discussing issues related with the very nuts-and-bolts of language laboratory functioning, that is, technology there is envisaged as a group of electronic or digital products and systems alien to the teaching subject matter which, nevertheless, appear as necessary and central to modern language instruction. In point of fact, the magnetic tape and tape recording machines opened new doors to the manipulation of discourse in the language classroom. Notwithstanding, the language laboratory movement became an entire success exactly because new linguistic groundings embraced its application and set the agenda for a pedagogical use of the novel technology.

In Hayes (1968:14-15) we can find the foundations on which the laboratory prestige and good press lay. His sympathetic pro-lab discourse could be split in four different sets of arguments. First, we find the methodological reasoning. Hayes argues that students' individual rate of learning is better approached through language laboratory use, that individual work is more readily available and self-instruction is also a possibility to consider in language laboratory-based curricula. Second, language laboratories were said to increase language learning effectiveness as better assessment of both speaking and listening skills was achieved. In a similar way, language laboratory advocates used to hold that teachers' counselling role was also positively highlighted as technology played up the opportunities for accessing students' performance[5]. Also, it was stressed that language learning effectiveness was increased as students were given the chance to self-measure their own skills. Thirdly, language laboratory systems[6] in the sixties were proudly signified as being high-tech electro-mechanical devices for teaching modern foreign languages. For that matter, Hayes (1968) devotes a whole chapter to the description of how acoustic phonetics and speech perception studies combine to secure in laboratories better input for students, better sound quality and, more on the verge of naivety, the presence of *native* varieties in the language classroom. Last, and this time probably least, it was stated that non-native teachers could improve their oral proficiency through the use of language laboratories. It seems to us that such a statement was more a product of methodological overindulgence and excitement than an intrinsic feature of technology applications in the FL curriculum.

III. LANGUAGE LABORATORIES TODAY

III.1. What's in a Name?

Despite the attacks and the lack of prestige to which it became associated, the term *language laboratory* is still deep-rooted and widely used by the profession. The research by Duncan (1987), who establishes a clear-cut distinction between language laboratory and microcomputer, Murphy (1993), Bensoussan (1994), Frankel (1994), Quinn (1994), Vanasco (1994), Myers (1995), Schwartz (1995), Biemiller (1997), Cornwell (1997), Danaher and Danaher (1998), Burnett (1998) all make use of the label. It is nevertheless true that some of the uses of the term are not merely descriptive. Thus, Hoffmann (1996) uses *language laboratory* to designate a highly restrictive use of technology in FLL and argues that the computer is the best tool available for taking tedious grammar drills out of the classroom while keeping them in the curriculum. Shenouda and Wolfe (1996) prefer to use *electronic language laboratory* while Patrikis (1995) retains the name but introduces computers in the work environment. Sivert and Egbert (1999) prefer to use the term *computer-assisted classroom* to the detriment of the traditional *laboratory* tag. They have a point when analysing the noun-phrase itself. The classroom, they say, implies a place where different kinds of learning can take place and where technology use is subordinated to discovery and understanding (1999:41). However, the terminological jungle is still out there: computer-based laboratory, computer-based learning centre (1999:42), CALL environment (Hanson-Smith 1999), technology-based environment (Hanson-Smith 1991), etc. The American Language Institute at Indiana University of Pennsylvania literally says on their website that a new state-of-the-art language laboratory is used for listening comprehension, while computer assisted language learning is employed as well as other video-based language learning activities[7].

Hanson-Smith (1991), when describing the CALL environment, draws a taxonomy which includes the self-access laboratory, the computerized instructional classroom and the language development centre. In the definition, some interesting ideas are heir to the time when it was produced- the same as with audio-oral language laboratory methodological development. It is implied that an environment is made for different types of learning, that is, different learning experiences, styles and approaches can all be met in the same physical location. Technology is not a priority in itself. In fact, it could not be otherwise in digital societies where individuals are no longer constrained by technology; rather on the contrary, technology opens up individual and collective possibilities in terms of business, leisure and, of course, education. Further down this argumentation, Sivert and Egbert (1999) hint at students' discovery and understanding as central ingredients for successful technology-based language learning. Put it another way, learning is paramount, teaching is subsidiary. Taking the analogy a bit farther, we could state that in environments learners have become active agents in their own process of language acquisition, whereas in rooms they were actors playing a role they were not aware of or which was imposed.

III.2. A Survey of Existing Language Laboratories Technologies

After the audio-lingual upheaval, traditional language laboratories were doomed to extinction and methodological exile. Notwithstanding, and this is the tenet of this paper, much of the old-flavour language laboratory spirit is still valid and present in the very new CALL-based environments. In the following lines, we set out to present an examination of three 21st-century state-of-the-art language laboratory technologies which were selected[8] following the opinions of users of the EUROCALL Members distribution list. Later, the implications which derive from their range of language learning possibilities will be discussed.

III.2.1. ***Artec Electronics and Revox Learning System***

Artec Electronics is based in Belgium and has been manufacturing language learning solutions for over forty years. The range of products clearly maps three different technological approaches.

The ATS / L language laboratory system owes much of its design and foundations to the types of language laboratory described by Hayes (1968). The Audio-Active (AA) and the Audio-Active-Comparative (AAC) features are still there, as well as the notion of teacher control. Terminology is familiar too: teacher consoles incorporate a keyboard and a graphic LCD display; students' cassette recorders are in audio booths and allow the recording of their exercises. This is a solely hardware-electronic solution which matches Hayes' system V.

The CATS/1 and CATS/4 multimedia language laboratories are described by the manufactures as computer-aided training systems that integrate AA and AAC facilities.

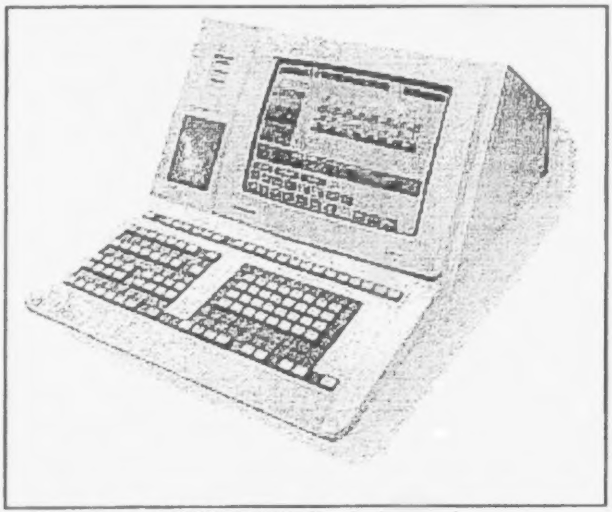

Figure 1: ARTEC CATS/4 Teacher's console

Here video can be transmitted from the teacher's console and can be viewed on the student desk. Programme distribution is available to a maximum of four groups of students whereas ATS/L only allowed this for two. Peripherals and future functions can be added as technology in general, and language learning technology in particular, develops. This is a solely hardware electronic solution which goes beyond Hayes' System V as video distribution and an optional interface for correction with a PC are both available.

AVIDANET didactic multimedia network is described by the manufacturer as a multi-purpose content-learning and learning-enhancing technology. Integration of audio, text and image is its most outstanding hallmark. Terminology starts to be somewhat different: teachers and students sit at workstations sharing digital resources in a network or broadcast. This is a

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platform-independent software-hardware solution which runs on an existing computer network.

III.2.2. *Virtual Language Lab for Windows (VLL)*

VLL is manufactured by Keylink Computers Ltd., a company based in England and founded in the early nineties. VLL is a multimedia database application which, exploiting file sharing, recording and retrieval facilities of modern networked PCs, captures and keeps students' performances as long as desired. Real-time monitoring is available and learners can listen to and record their own output. In a similar way, teachers can monitor and access these productions. Intercom and phone facilities are available, both real-time and by voice mail. As long as there exists a networked computer room, VLL is a very affordable, solely software-based solution which covers the most basic needs of standard language laboratories functions.

III.2.3. *Teleste / Divace Learning Solutions*

Based in Finland, Teleste / Divace is one of the leading companies in providing technology-enhanced language learning solutions for over thirty years. As with Artec Electronics, the range of Teleste / Divace products clearly maps different technological approaches. Drawing on Tandberg TC series, Imperata[9] has been designed for networked computer classrooms where it is necessary to have full control of students' workstations, allowing the use, demonstration and broadcast of software, computer screens and media documents.

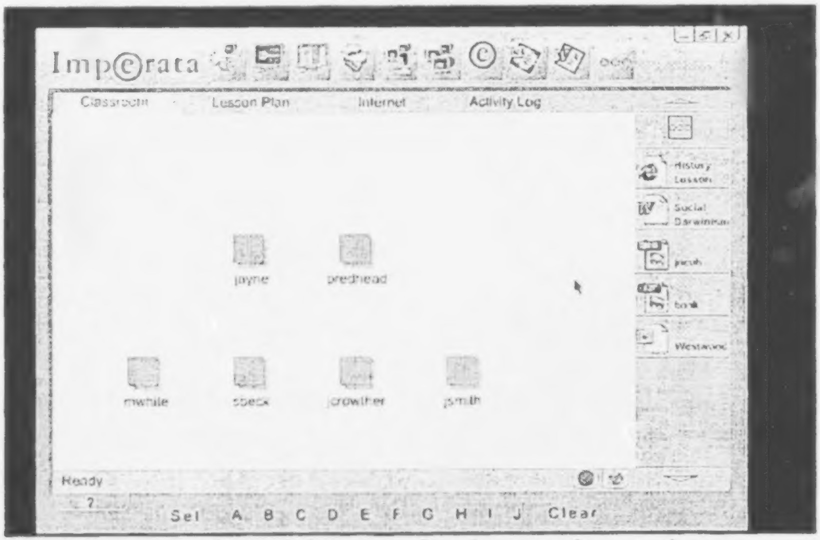

Figure 2: Screenshot from Imperata classroom layout

Grouping and locking of particular workstations is also possible. This is a solely software-solution which is not language learning-specific.

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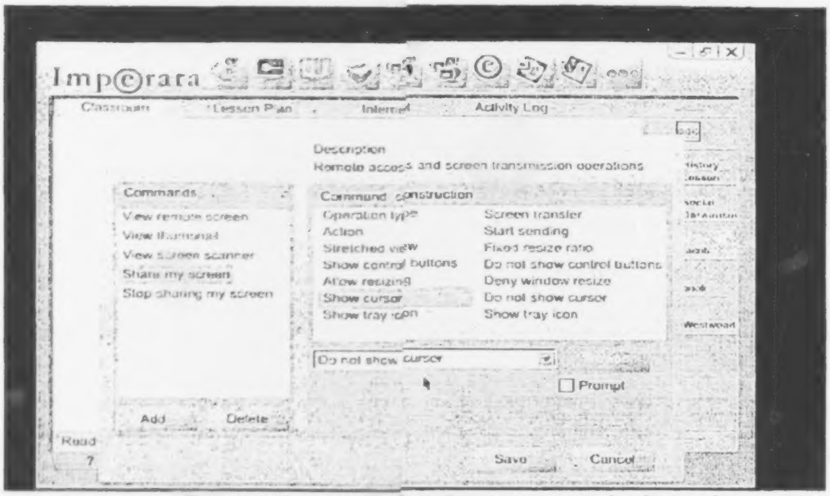

Description
Remote access and screen transmission operations

Command construction	
Operation type	Screen transfer
Action	Start sending
Stretched view	Fixed resize ratio
Show control buttons	Do not show control buttons
Allow resizing	Deny window resize
Show cursor	Do not show cursor
Show tray icon	Show tray icon

Do not show cursor

☐ Prompt

Figure 3: Screenshot from Imperata customisation options

In a recent review by Chris Drage in The Times Educational Supplement[10], Imperata was praised for its lesson creation and launching system facilities, as well as for the ease with which lesson portfolios and assignments can be prepared by teachers and for the resources gathering approach. This solution is compared to the classic Viglen's Classlink v3 and the most recent Classlink 2000 network management software which uses a web browser interface to administer either server or workstation files and routines. Again, this is a non-language-specific solution which can be adapted to the needs of language students provided that digital contents become the core for instruction.

The Information and Communication Manager (ICM) Divace Duo Media Centre goes beyond the capabilities of Imperata as it combines a classroom and resource management system with the functionalities of the Divace Duo multimedia recorder. Once again, the key feature of this solution is integration, which enormously facilitates teacher and student different use of learning tools. The benefits of Divace are reviewed in Pérez-Paredes (2000 and 2001).

The Enhanced Language Instruction Centre (ELICE) is a digital teacher-led system which is language-learning specific. The hallmark of this solution is the fact that no computer network is necessary for a lesson to be conducted. This is a software-hardware solution which substitutes students' workstations for a student audio panel. In turn, teachers are provided with specific software, a connection unit, a media storage unit, a teacher audio panel and an audio source interface. The key notion which drives the ELICE rationale is that of session. This allows for the selection of students and groups of students within a class, monitoring features and activity selection that remains constant throughout the traditional lesson. The activities which are supported are listening comprehension, model imitation, read aloud exercise, phone conversation, pair discussion, group discussion, simultaneous interpreting, consecutive interpreting, recorded response and quiz test.

III.2.4. *Language Laboratories Taxonomy*

Based on the description above, we can conclude that the modern language laboratory will invariably fall within one of the following three categories. **Language Laboratory type 1** (LL1) is very much in debt to Hayes' System V. It presents a hardware solution where a networked classroom is not essential and where the main features are teacher-oriented: programme distribution to two groups simultaneously, dynamic assignment of students to different programme groups, conference group, menu driven selection of eight different sources for programme groups monitoring of a source, not necessarily connected to a programme group, change of input sensitivity for each source, central rewinding for two groups simultaneously pairing function , group call with full recorder control, general call for all groups monitoring of students in four different ways (manual, random, step by step, and automatic with time interval), two-way communication with monitored students, with full recorder control, two-way communication with one student during group call, with distribution of the communication to the whole group by using one button recording of an individual student on one of the source recorders, test and evaluation of student's work, library function use of macro functions for combined manipulations (such as source selections, copy selections, etc.), on-screen help for most of the functions of the laboratory, copy pause function, recording possibility for teacher and student(s) during pair function or conference function.

Language Laboratory type 2 (LL2) is an evolution of type 1, with integrated computer-aided and enhanced multimedia facilities. It presents a hardware-software solution where a networked classroom is not essential and where the main features are teacher-oriented: monitoring of sources, customisation of most features, simultaneous program distribution on groups, library or free function students, pair work, conference grouping, manual and random choice of students in different group configurations, group call, two-way communication with monitored students, recording of an individual student and test and evaluation of students' work. Virtually every feature of type 1 is found on type 2.

Language Laboratory type 3 (LL3) is a multipurpose solution which generally runs on networked computer environments. A spin-off of this approach does without PCs and relies on hardware, non PC-based devices which are more affordable and portable although less versatile. Language Laboratory type 3 facilitates the integration of Network Based Language Teaching (NBLT) and simultaneous work on different language learning paradigms such as the structural, the cognitive and the sociocognitive (Kern and Warschauer 2000). In general terms, networked language laboratories play up the communication opportunities of students:

> Networks connect language learners and language teachers and empower them by expanding and deepening their opportunities for communication in a range of contexts which support the learning and use of language, and which make possible the exchange of ideas on a scale far beyond that imaginable in the traditional classroom (Hoffman: 77).

The following table summarises the typology discussed above.

	LABORATORY PRODUCTS						
LANGUAGE LABORATORY TECHNOLOGY ⇩	ATS/L	**CATS/4**	**AVIDANET**	**VLL**	**Imperata**	**DIVACE Duo Media Centre**	**ELICE**
LL 1 Hayes' System V	☑	☑					☑
LL 2 Multimedia computer-aided Hayes' System V		☑	☑			☑	☑
LL3 Networked Computer room			☑	☑	☑	☑	☑

Table 1: Language Laboratories Taxonomy

III.3. Techno-short-sightedness and the Language Laboratory at the Crossroads of Paradigms

From the description of the resources we have presented above, it can be assumed that the newest language laboratories can be defined as more dynamic and expandable than their old *ancestors*, which, as a contrast, could have been defined as being more stative and finalized. Manufacturers these days would add that their products are more affordable and within the budgets of most institutions.

Definitely, the rapid developments in ICTs and the widespread use of personal computers have reshaped the perceptions of teachers and students in terms of adaptability to new advances in education technology. At present, language laboratories are more readily updated than ever before. It could not be otherwise. The Internet is constantly distributing new applications which cater for the needs of different groups of students, teachers and institutions. This distributional policy is narrowing the gap between developers and final users in terms of promotion and delivery. Along with this supremacy of the Internet as a worldwide *figurative* operation system (Gabelas-Barroso 2002), software solutions have become or are in the process of becoming a standard in many aspects of language learning, with applications ranging from classroom network management to language practice and communication. As we have seen, LL3 is becoming more widely manufactured by companies aware of the potential and convenience of implemented solutions based on existing or easily-set-up networks, which implies that the language laboratory is moving away from hardware based on electronics and circuitry into PC-based hardware and software solutions.

Despite the novelties, not much has really changed in the new language computer-room environment, and probably for many it might come as a surprise that Hayes' 1968 definition of language laboratory can still be functional in almost any high-tech state-of-the-art language laboratory purchased in the 21st century: "A language laboratory is a classroom or other area containing electronic and mechanical equipment designed and arranged to make foreign-language learning more effective than is usually possible without it" (p.1). Even today his broad classification of laboratories in class systems and library systems still makes sense as long as you substitute the first for computer room and the second for self-access centre.

It is necessary to understand that the language laboratory, as any technology, has undergone a process of change and adaptation, which has implied arrangements and fine-tuning of the technology as users constantly move forward in terms of performance demands. Unfortunately, more than with other *gadgets* in the FLT field, the profession got the future of language laboratories wrong, ripping up their chances as a long-run technology and misunderstanding their functions and potential. Fidler (1997) has shown how many a technology has been a victim to its supporters and developers alike, as too much pressure and expectations have usually been put on their immediate possibilities. Futuristic views on the potential of language laboratories foretold incredible results in terms of language learning, laying perhaps too much emphasis on the technology and the audio-lingual methodology, but forgetting all too quick the rest of the factors and the complexities of the language learning experience. Possibly the post WW2 era was a time for optimism and joy, but certainly it led the Language Laboratory Movement advocates into simplification and indulgence in the field of FLT.

This has remained unvarying for years. One of those futuristic views on learning was portrayed by Jean Marc Cote when in 1899 he was commissioned to depict life in 2000. Cote's picture is quite similar in different ways to learning procedures even nowadays: teacher is in control as students receive information through a technology-enhanced device. Regarding this array of *visions* on radical changes in formal instruction Holmes (1999: 263) has pointed out how the expectations about language laboratories and the early days of CALL have spawned an attitude of disbelief towards technology-driven revolutions in language learning. Again, scepticism if not distrust seem the territory to camp out and spend the night before dawn arrives. And precisely because one of the basic principles underlying language teaching should be effectiveness, one still wonders why language laboratories were not given alternative methodological uses. Rephrased, what was the point of the methodology stubbornness that surely enough played havoc with the language laboratory technology?

Paul Saffo's 30-year rule, quoted by Fidler (1997), may help us understand the ups and downs of the language laboratory through the second half of the 20th century. For him, it takes an average of thirty years for a new idea or technology to permeate societies. In other words, change is a slow process. Although the time span should be considered as an estimate, or at least we do, we are definitely interested in the process which underlies Saffo's rule. For him, the first decade is a stage where excitement, confusion and penetration of the idea or technology combine. The second decade is the stage where the idea or product actually permeates the society, it is a time of movement. The third decade is the last stage, the time when users grow disillusioned precisely because of the spread of the product: *everybody's got it, and so what?* It is just another technology, just that.

The language laboratory technology has been a victim to what Fidler (1997) has called techno-short-sightedness, a process through which the short-term impact of a particular technology is over-estimated, producing frustration among users and supporters who fail to meet the expectations that were created when the technology first appeared. Davies (this volume) quotes Oppenheimer and stresses the fact that if teachers are neglected not much can be expected from any sort of language learning technology. We would add that teachers were, during the audio-lingual upheaval, methodologically kidnapped as they were forced to make use of the technology in their hands in a very restrictive, unenthusiastic and unimaginative way.

We have already stated that the exact point in time where the language laboratory established itself as a technology could be 1946, according to Hocking (1964). One may tentatively assume that between that year and the publication of Stack 1960 manual, Saffo's first stage developed. In the sixties and the seventies, the language laboratory idea grasped the interest of students and teachers alike, that is, it had a profound effect on society and its use became widespread. The third stage came up with the adoption of the communication-based approach to the learning of foreign languages.

The previous stage-analysis is a language laboratory development survey based entirely on the assumption that the language laboratory appeal is now lost and forgotten, just a dead-end technology. However, the situation is far from being settled. In III.1.we showed that, at least for researchers, the term is alive and kicking, being widely used in the FLT context. More importantly, from the examination of the state-of-the-art language laboratory industry one still gets the idea that in terms of machine-related interaction not much has changed. Hayes' language laboratories systems classification is still recognisable in Artec and Tandberg range of solutions. Hayes' Language laboratory system V (pp. 34 and ff.), the most powerful equipment of the time, was based on listen-respond (Audio-Active), listen-respond-compare, intercommunication and monitoring facilities. Furthermore, Hayes' laboratory teacher's console description (1968) is still valid today: programme source, player, headphones, microphone, amplifier and switches for control and monitoring all are present in modern computer environments. So why is Saffo's 30-year-rule apparently of relatively little use?

The reasons might lie in the fact that a broad concept of language laboratory is still being developed in terms of design and functionalities, which would radically and necessarily redefine the traditional post-communicative-approach approximation to this technology. We are definitely tempted to state that existing language laboratories have adapted the impact of recent communicative based language teaching and the newest socio collaborative paradigms of language teaching, readjusting the gaze and scope of the "old lab" to a more diverse, richer learning environment which equally preserves and incorporates teaching practices.

III.4. Language Laboratories Tomorrow

We have seen how in the past decades the language laboratory has evolved along with educational technology. During this time, perhaps too much stress has been laid on the technological gadgetry and, possibly, too little on related research. Today, we have reached a point where computers are to dominate the education agenda in the future and, accordingly, we can be sure that the road is paved for a digital-based language learning laboratory classroom or environment. Besides, on a much wider perspective, we have the certainty that digital files will be manipulated faster, better and cheaper in the forthcoming years.

The diffusion processes of the existing language laboratory technology, mainly those based on LL2 and LL3, are radically different from those in the 40's and the 50's. Language laboratories today continue to present an *advantage* in formal language learning contexts, as the so-called audio-oral skills are better dealt with in any of the three language laboratories discussed above. Language laboratories are more *compatible* with other non-language specific technologies such as digital contents or wireless technologies (García, this volume) and are more *visible* as computer rooms are ubiquitous in educational institutions. Finally, language laboratories are *less complex* to use these days as ICT literacy is becoming widespread. According to According to the Computer Industry Almanac[11], in 2001 the number of PCs-in-use topped 600M units worldwide. In the next six years this figure will nearly double to over 1.15B PCs-in-use by year-end 2007 for a compound annual growth of 11.4%. The U.S. has the largest number of PCs-in-use with 175M at year-end 2001, but the growth will slow and will increase by only 6.2% per year to reach 251M units in 2007.

All of these are key features for Rogers (1986) who sees in them the seed of a technology true entrenchment. In particular, and within the FLT field, language laboratories are now closer to the teaching profession which can use them to design, develop and implement their own language learning materials, this way freeing themselves from the traditional subjugation and dependence on commercial learning products. But this is just one of the many features which may account for the relevance of language laboratories in FLT today.

Richards (2000) has predicted that some of the next moves in language teaching methodology will include more teacher and student collaboration, more synergy of methods, more focus on content-based methodology, more room for different learning styles, more emphasis on learning strategies, and more stress on holistic learning. In this landscape, the language laboratory is well positioned to perform a leading role in the language learning arena.

Paradoxically, it is precisely on the process of evolution of old audio-lingual laboratories described above that the new environment is likely to offer the best of its contributions. Fidler (1997) has written about mediamorphosis, that is, the transformation of a communication medium, usually caused by the complex interplay of perceived needs, competitive and political pressures, and social and technological innovation. He identifies six principles in mediamorphosis that explain how the first generation of language laboratories have evolved into today's environments: coexistence and co-evolution of media forms, gradual change or metamorphosis of new media forms from old ones, propagation of dominant traits in media forms through languages (spoken, written and digital), survival of media forms and enterprises in a changing environment, merits and needs for adopting new media, and delays from proof of concept to widespread adoption of new media (Saffo's rule). The 21st century language learning environment is inheritor to the phonetics laboratory of the 20th century, keeping most of its flavour and physical layout but transforming radically the concept of language training, moving away from simulated *interactivity* (AA or AAC) to simulated or even human *interaction*. The new language learning environments, which will tend to rely more and more on Language Laboratory type 3 models, have adopted the physical appearance of old language laboratories, propagating and revitalising traditional laboratory-like modes of teaching within a richer socio-collaborative paradigm (Kern and Warschauer 2000).

Digital language — unlike spoken and written — enables communication between machines, and mediated communication between humans. In digital language human distinctions between text, images and sounds are irrelevant. We are in the earliest stages of such transformations, says Fidler, but we can already see how computer networks using digital language are greatly extending human interactions throughout the world and in the language classroom. These days we communicate quite differently and this fact is to affect how language learning methodology is shaped up. Language laboratories, especially LL2 and LL3, favour the many-to-many, the everyone-to-one and the one-to-everyone forms of communication. We should not forget that the long-standing debate on authenticity in the language classroom has been based on either the practice of pair/ group work in simulated situations or, as Widdowson (1990) has put forward extensively, the practice of communication activities which are authentic in the context of the language classroom. Either way, communication in the 21st century has put new demands on individuals which are well above the standards and realities of the pre-Internet era. The new codes of communication, digital in nature, sustain new mobility networks as well as new social relations based on a global-scale approach with new forms of interaction and new actors. Today's language laboratories have found a way into digitalism (Fukuyama 1992) as it is in the *lab* that more updated, authentic forms of learning and communication take place. The language laboratory, especially LL2 and LL3 types, go beyond the realms of Networked Based Language Teaching or, rephrased, fully extent its potential enabling students to deal with

Spector and Davidsen (2000) have pointed out, very accurately, that all too often educators are quick to enhancing novelties, completely disregarding existing technologies and constraints of different nature and context-related factors. Adopting one single exclusive approach to using technology to support Foreign Language Learning (FLL) implies oversimplifying a complex problem and avoiding a particularly clouded issue. Fortunately, the language laboratory has proven itself a successful long-run technology which has undergone heydays as well as hard times, which has received praise as well as bitter criticism. The language laboratory these days deserves the attention of a teaching profession which is relentlessly bound to meet the demands of a society which relies more and more on both ICT literacy schemes and on an open and flexible learning paradigm far from methodological dogmatism which, historically, has gone hand in hand with the spread of language laboratories in the past. As we know, integration of technologies, which in practice results in methodology selection, is based on either conscious or unconscious choices of teaching resources, participants' roles, materials and educational intentions but, very significantly in our case, on a critical understanding of the language laboratory educational technology evolution into a new tool for learning and teaching foreign languages.

NOTES

1.National Defense Education Act, signed by President Eisenhower on September 2, 1958
2.http://inet.ed.gov/
3.http://www.apple.com/education/
4.From Educational Leadership Toolkit. A project of the National School Boards Foundation implemented by NSBA's Institute for the Transfer of Technology to Education with a grant from the National Science Foundation. http://www.nsba.org/sbot/toolkit/
5.An idea we have recently highlighted as one of the advantages of Network Based Language Teaching paradigms (Pérez-Pareders 2001)
6.Hayes (op.cit.) describes five different language laboratory systems, which range from the very basic Listen-Respond lab with a tape recorder with built-in loudspeakers to the very sophisticated LISTEN-RESPOND-COMPARE with separate recording facilities for students, individual microphone and headphones and intercommunication and monitoring facilities.
7. On the web at http://www.iup.edu/admissions_and_aid/american_language_institute.htm
8. The Learning and Teaching Support Network at the Subject Centre for Languages, Linguistics and Area Studies maintains a website with relevant information on language laboratories. This can reached at http://www.lang.ltsn.ac.uk/resources/faq.digital.htm

[9] The version described here is Imperata 4.0

[10] 04/01/2002

[11] On the web at http://www.c-i-a.com/index.htm . Press release March 11, 2002.

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Web Assisted Language Learning (WALL) and Learning Management Systems (LMS) in Virtual Centres for Foreign Languages

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ABSTRACT

The Web has had different uses in the teaching of modern languages: (a) as a source of resources: In a very short time, the Web has become the largest source of resources for the learning of any foreign language; (b) as a window of multimedia applications (in this way CD-ROM is replaced by the Web as the main means of storage of multimedia applications.); and (c) as an e-learning platform.

For an institution to create a Virtual Centre for Foreign Language Learning, certain software must be installed in a computer connected to the Internet. This software is called a Learning Management System (LMS). Apart from the basic functions of the majority of the LMS, we should mention the advanced functions of the LMS: voice chats, digital television channel, mobile telephone services, WAP complementary services and access to the LMS through electronic pocket diaries (PDA). There are many comparative studies of LMS, carried out by consultants, specialist magazines, etc. Despite the proliferation of comparative studies of LMS, they have hardly considered the specific features of CALL software, in which the functions that promote sound interaction should be more advanced. On the other hand, the subject of standards has become relevant. It is logical that the user who introduces contents into a given LMS would want the guarantee of being able to use those contents within another LMS.

KEYWORDS: Web Assisted Language Learning (WALL); Learning Management Systems (LMS); Virtual Centre for Foreign Languages; Web Based Training (WBT); Computer Assisted Language Learning (CALL); e-learning

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I. INTRODUCTION

The enormous expansion of the Internet, thanks to the popularization of the World Wide Web since 1994, has given birth to a new discipline, the acronym for which is Web Assisted Language Learning (WALL). WALL is defined as: *the science that aims to study the use of the World Wide Web in the learning and teaching of second languages*.

The use of the Web has brought great advantages to teaching in general, which we can summarise as follows:

- *Very easy to use*. Once we have access to the Web, working with it is as simple as clicking the mouse, because it does not entail any additional knowledge of computers. That is why we frequently talk of the "click culture".
- *A multimedia communication system*. One of the great microcomputing revolutions of the last few years is, without a doubt, that we have been able to digitize — that is, to represent in a code of zeros and ones— not only textual information, but also sound and audiovisual information.
- *A means of world wide communication, in which, in comparison to other media — telephone, fax, normal post — the distance between the issuer and the receiver of information is irrelevant*, even in terms of cost. When we access a page on the Web, we often don't know where the computer sending it is located: it could be just a few metres from our own computer, or thousands of kilometres away. The user does not notice the difference at all and the cost is the same. This does not happen with ordinary mail or the telephone, where the cost is in direct relation to the distance: the further away the issuer is from the receiver, the higher the cost.
- *Low costs* for students and for teachers who generate contents. Since the Internet functions like an international co-operative without profit as a motivating force, where each member only has responsibility for the maintenance and the connection to the closest node, costs are reduced for all.
- *The Web is a multiplatform and is generally very standardized*. The majority of access software to the Web — browsers like Netscape Navigator, Microsoft Internet Explorer — offer versions for a great number of microcomputer types.

  On the other hand, The Web has also achieved a high level of standardization in the exchange of all kinds of information. Not only are there very well defined standards in the exchange of texts, so that the "special" characters of the Spanish alphabet which differ from the English alphabet — Ñ,ñ,á,é,í,ó,ú,ü,Á,É,Í,Ó,Ú,Ü — can be represented by any computer, but the same phenomenon occurs in the transmission of graphic, sound, and audiovisual information. Thus, students can use any type of computer (Windows compatible PC or Macintosh) and obtain equal access to information.

- *Web connection for the great majority of research centres and universities*. This is one of the great added values of the Web. We must also remember that, for the distance learner, this is one of the most important factors in terms of its contents, in that it gives access to the largest library of electronic publications ever dreamed of.
- *Enormous opportunities for interaction* by means of languages like Java, or programmes like Flash or Macromedia Shockwave. The Web is often considered a very passive means of accessing information. However, thanks to the appearance of the programme language Java, highly interactive access to software is possible and this is similar to any interactive multimedia stored on CD-ROM.
- *Dramatic expansion as a means of universal communication*. It seems likely that the Web will become a means of communication which is as universal as the fax or the telephone is nowadays in the industrialised countries.

Although the list of advantages in using the Web for the distance learning of modern languages could be further extended, we should not overlook some *inconveniences*:

- *General confusion in the access to information*. Although the Web has become, in a few years, a standardized means of communication around the world, nevertheless the procedure used to access multimedia information can cause confusion. The use of hypertext means that each Web page can contain numerous links to other pages, and these links are generally indicated with different colours or underlined. As a result, the Web is a very dense net of information pages which are inter linked by a system of innumerable cross references.
- In order to avoid this general confusion it is necessary for the design of Web contents to neutralize this tendency to dispersion, and to encourage linear navigation.
- *Almost absolute predominance of English*. For many students, the fact that a very high percentage of documents are only in English represents a great obstacle to the learning of foreign languages other than English.
- *Possible use for destructive and criminal purposes*. There is still criticism of the use of the Internet for disreputable, even criminal, purposes. It is a contact place for fascist propaganda, pornography, etc. Given the organisational characteristics of the Internet — rather than having a sole owner managing the contents, there is an international co-operative which is almost exclusively concerned with the technical operation — it is very difficult for any initiative which introduces some censure to thrive.
- *Slowness in access to the Web*. Due to the vast growth of the Web, it is evident that it might be untimely in some cases to talk about information highways, because the impression that we sometimes have is that these highways are almost always at a complete standstill (which is why we ironically refer to it as World Wide Wait.).

II. USE OF THE WEB IN CALL

The Web has had different uses in the teaching of modern languages. We can summarise them in three sections:

1. The Web as a source of resources.
2. The Web as a window of multimedia applications.
3. The Web as an e-learning platform.

II.1. The Web as a Source of Resources

In a very short time, the Web has become the largest source of resources for the learning of any foreign language, and it is important to emphasise the following characteristics:

- Most newspapers and magazines in industrialised countries put a free version of their main articles at the disposal of the Internet user. Also, most public and private institutions have their own site on the Web, thereby providing access to any relevant information. This has meant that the feeling of isolation among most teachers and students of foreign languages has disappeared, because they have access to up-to-date information on the country where the foreign language being taught or learnt is spoken.
- Most accessible resources on the Web can be re-used. Thus, both text and images that appear on the Web can be integrated, without major difficulties, in any word processing programme — for example, Microsoft Word —, and the teacher can change them and re-use them for educational purposes, without violating the author's rights.
- Specific access to resources related to certain areas has turned the Web into a primary tool for the teaching of languages for specific purposes. That is the case, for example, in the field of tourism, as the Web allows travel planning, as if it was a real world activity: from the booking of plane or train tickets to the hiring of a car, hotel booking, buying tickets for shows, etc.

II.2. The Web as a Window of Multimedia Applications

The Web has also been used as *a window of multimedia applications*. Thus, it is possible to have access to multimedia applications stored in sites located anywhere in the world from any browser (Netscape Communicator or Internet Explorer), and in this way the CD-ROM is replaced by the Web as the main means of storage of multimedia applications.

Despite the simplicity of this approach, this vision has had both advantages and drawbacks, which we will discuss as follows:

- Being able to gain access from a browser to any multimedia application in any site on the Internet creates new opportunities, because the costly distribution of any multimedia application can be avoided, and also the author can distribute and market his or her applications without intermediaries.
- However, not every multimedia application can be fully accessed from a browser:
  - Internet bandwidth is still limited. As a result, it is still difficult to gain full access to multimedia applications, which generally consume many resources, from a browser. This, for example, is the case with video or sound files.
  - The languages that allow the production of multimedia applications through a Web browser (Flash, Director, Java, etc.) have their limitations, even though they are already very advanced.

Until the Web has a speed that will allow us, for example, to view videos on a full screen with a quality comparable to a DVD and from any PC, we will continue to opt for hybrid solutions in this type of multimedia application. While the larger files, like videos, are stored on CD-ROM, the rest of the information comes from the net. From one browser the user can access a CALL multimedia application, whose information comes from the net, and its CD-ROM. An example of this is *enREDando* (http://www.enredando.org; see *Figure 1*), an application for learning Spanish as a foreign language, which is stored mainly on CD-ROM, with contents always viewed from a Web Browser.

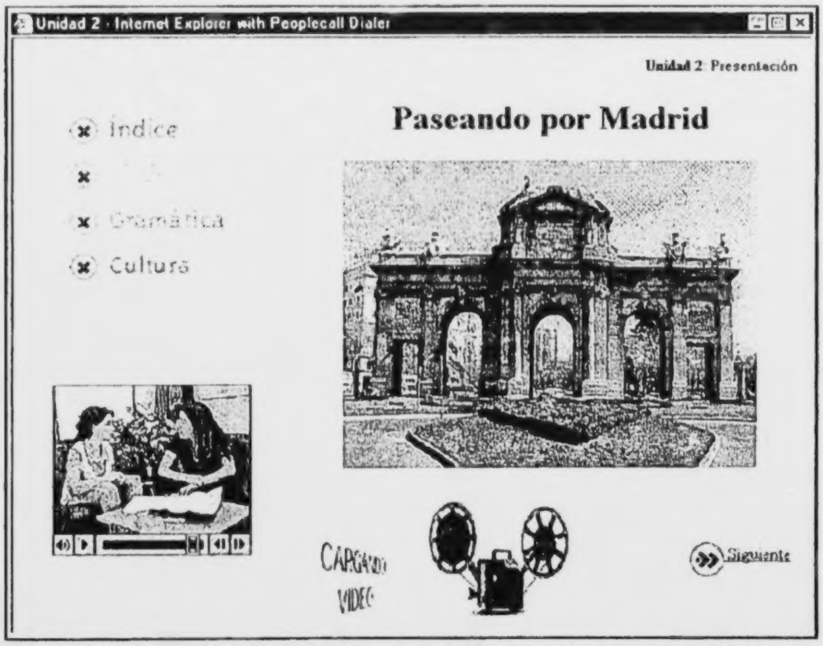

Figure 1. *enREDando*: Internet Spanish course for foreigners (main author: G. Ruipérez)

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II.3. The Web as an E-learning Platform

In the last few years the Web has become a very useful "telelearning" tool. It is known as e-learning and can be defined as follows:

> Distance learning characterised by a physical separation between teachers and students — without excluding occasional face-to-face meetings. Between teachers and students a two-way asynchronous communication predominates, with the Internet as the preferred means of communication and distribution of knowledge. The student is at the centre of independent and flexible training, and negotiates his/her own learning, generally with the help of external tutors.

III. LEARNING MANAGEMENT SYSTEMS (LMS)

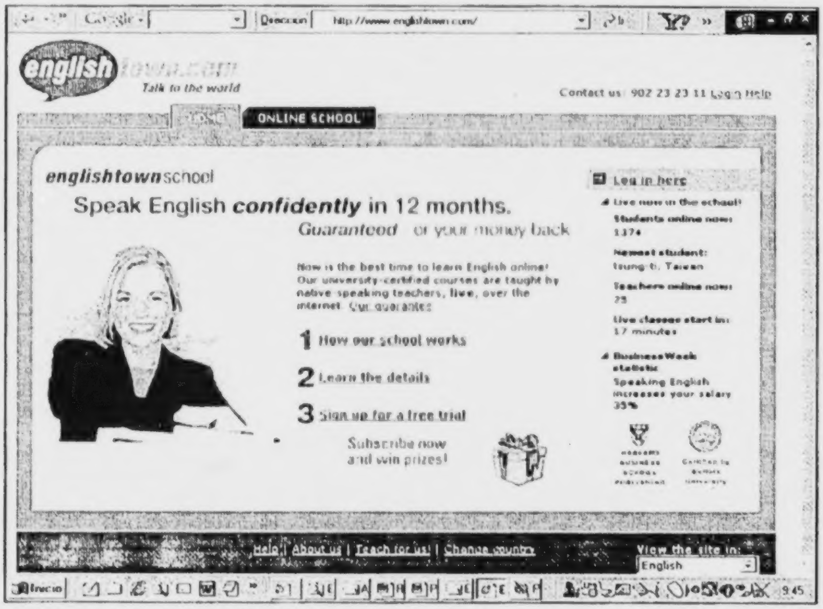
III.1. Definition and Characteristics

For an institution — whether public or private — to create a Virtual Centre for Foreign Language Learning (see *Figure 2*), certain software must be installed in a computer connected to the Internet. This software is called a Learning Management System (LMS). We can define LMS as follows:

> Software, generally in the form of an integrated package (made of software units with independent functions), which includes all the necessary logistics to be able to offer courses through the Internet or an intranet.

LMS have a series of general characteristics that define a series of basic training functions (see *Figure 3*):

- Student's personal diary
- Student's personal details page
- Contents area:
    - Contents
        - ☐ Course programme
        - ☐ Learning guide
        - ☐ Most frequent questions
        - ☐ Subject matter
        - ☐ External materials and references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Newest student: tsung-ti, Taiwan
Teachers online now: 25
Live classes start in: 17 minutes

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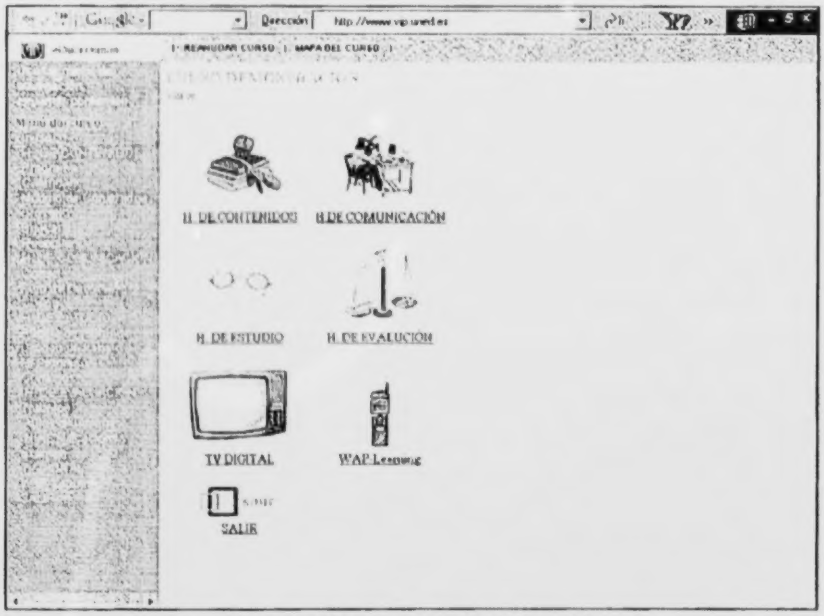
Figure 2. Englishtown: Virtual Centre For Foreign Language with affiliates all over the world (http://www.englishtown.com)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REANUDAR CURSO | MAPA DEL CURSO
H. DE CONTENIDOS
H DE COMUNICACIÓN
H. DE ESTUDIO
H. DE EVALUCIÓN
TV DIGITAL
WAP Learning
SALIR

Figure 3. Typical interface of an LMS (here: WebCT).

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  - Tools for the administration of contents
  - Contents compiler
  - Automatic index of contents
  - Searches
  - Glossary
- Communications area
  - Personal e-mail
  - Discussion forums
  - Chats
  - Shared notice board
- Assessment and self-monitoring
  - Assessment
  - Written work assessed by the teacher
  - Interactive automatic self-assessment exercises
  - Exams or tests (assessed by the teacher or self-assessment)
- Grading of the assessments
  - Issued by the teacher
  - Self-assessment automatically generated by the LMS
- General self monitoring

Apart from the basic functions of the majority of the LMS, we should mention below the *advanced functions of the LMS* that for the moment only appear in the advanced LMS:

- Voice chats
- Digital television channel
- Mobile telephone services:
  - WAP complementary services
  - Access to the LMS through electronic pocket diaries (PDA)

III.1.1. Basic Functions

The student's *personal diary* is a virtual diary available to the student, and it is of great interest, because the student can include in it personal notes (exam dates, holidays, academic days, etc.).

The personal page enables each student to create, in the LMS, a Web page presentation, where they can include, apart from a photograph, personal details of interest to other students.

From the didactic point of view, it is important for the teacher to encourage his/her students to create their own personal page, so that an authentic virtual community among the students can be achieved, creating a sense of belonging to a group with similar interests and concerns.

In the electronic *contents* area of the LMS, the contents are as follows:

- *Course programming.* The course programme includes all types of general information about the course, particularly details about the course that someone who has not yet enrolled would need to have a very clear idea about it.
- *Study guide or didactic guide.* One of the keys to the success of distance teaching through Internet is that the students have at their disposal a good study guide. This should give thorough information about the best way to approach learning. A didactic guide generally has the following components:
  - Outline summary of the course contents
  - Distribution of the learning time. In this section very concrete and realistic statements about how the student must distribute his/her learning time must be made.
  - General recommendations about how to manage the course as painlessly as possible: how to contact the teacher, how to overcome difficulties already foreseen by the teachers, etc.

One section of the contents that is widespread in Internet learning is the most frequently asked questions area. It involves a series of brief questions with concise answers, where the most frequently asked questions by the students and the corresponding teachers' answers are included.

In addition, the contents section contains the course electronic contents (text, sound recordings, audiovisual recordings, activities).

In order to manage the course contents stored in electronic format, the LMS frequently includes *management tools for electronic contents*. The idea is to facilitate access to information. Among the most common tools that the student can find are: *contents compiler, automatic index of contents, course searches and glossary*.

Another group of advanced functions relates to the *communications area*, and these are, without doubt, the most important functions in any Internet course, since most are exclusive to virtual courses, and do not exist in conventional courses. These functions facilitate communication between teachers and students, and among students.

As mentioned before, the most widespread functions in the communications area of any LMS are the following:

- Personal e-mail
- Discussion forums
- Chats
- Shared notice board

E-mail is without doubt the most used resource in the LMS, because of its countless advantages:

- *It is based in an asynchronous communication system*, which means that the sender and the receiver do not need to be active at the same time for communication to occur.
- *E-mail messages are very simple to write*, since the usual conventions of other media do not apply.
- *No superfluous information*. As a rule, e-mail texts are very direct, with little superfluous information.
- *High level of grammatical and orthographic freedom*. Whilst in a conventional letter any error or spelling mistake can cause a bad impression, there is more tolerance in e-mails. The absence of accents, ñ and diaeresis (ü) are not taken very seriously.

Discussion forums are really asynchronous textual telediscussions, where teacher and student ask questions and answer messages which are stored by the LMS, in such a way that any student can answer or add to any other previous message, or make a new comment or question, which the rest of the students or teachers can answer or add to if they feel it is appropriate.

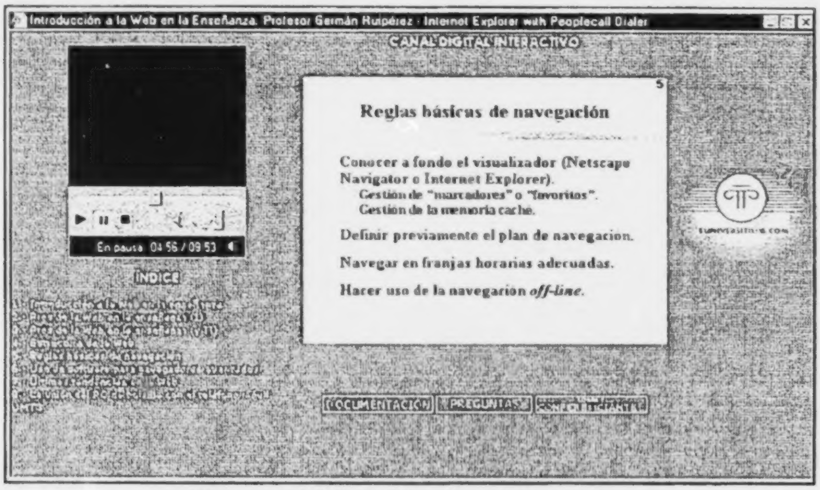
Written conversations —often known by the original English name of *chats*— are really discussion forums, but they are based in synchronous communication, so that all participants are positioned at the same time in front of the computer typing what they think. However, if what they have to share is graphical rather than text based information, then they generally use a "shared notice board". This is used for a few subjects which require graphical interaction to explain certain topics.

III.1.2. Advanced Functions

As we have said before, the LMS supply the students with advanced functions, which we can now summarise as follows:

- Spoken conversations
- Digital television channel (see *Figure 4*)

- Mobile phone services:
  - WAP complementary services (see *Figure* 5)
  - LMS access through pocket electronic diaries (PDA)


Introducción a la Web en la Enseñanza. Profesor Germán Ruipérez - Internet Explorer with Peoplecall Dialer
CANAL DIGITAL INTERACTIVO
En pausa 04:56 / 09:53
ÍNDICE
5
DOCUMENTACIÓN
PREGUNTAS

Reglas básicas de navegación

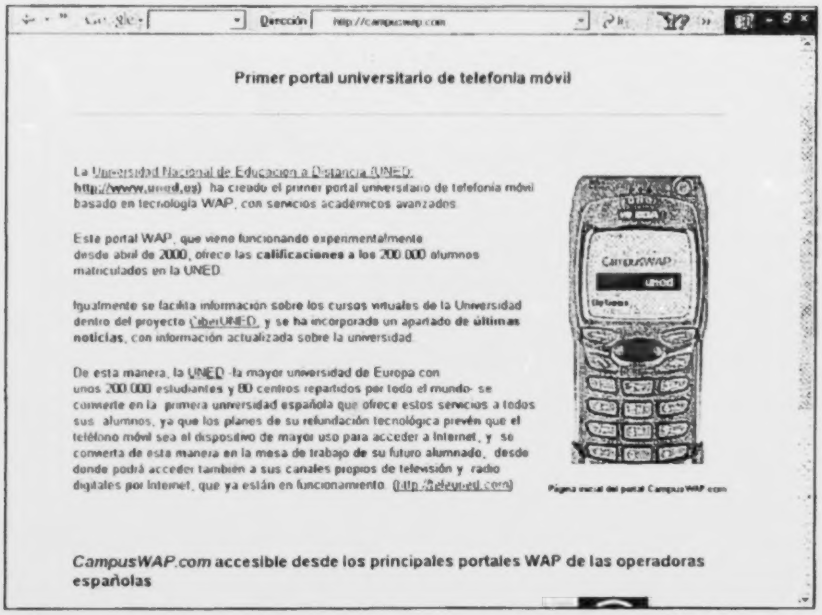
Conocer a fondo el visualizador (Netscape Navigator o Internet Explorer).
Gestión de "marcadores" o "favoritos".
Gestión de la memoria caché.

Definir previamente el plan de navegacion.

Navegar en franjas horarias adecuadas.

Hacer uso de la navegacion *off-line*.

Figure 4. Digital television channel via the Web.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Opciones

Primer portal universitario de telefonía móvil

La Universidad Nacional de Educación a Distancia (UNED: http://www.uned.es) ha creado el primer portal universitario de telefonía móvil basado en tecnología WAP, con servicios académicos avanzados.

Este portal WAP, que viene funcionando experimentalmente desde abril de 2000, ofrece las **calificaciones** a los 200.000 alumnos matriculados en la UNED.

Igualmente se facilita información sobre los cursos virtuales de la Universidad dentro del proyecto CiberUNED, y se ha incorporado un apartado de **últimas noticias**, con información actualizada sobre la universidad.

De esta manera, la UNED -la mayor universidad de Europa con unos 200.000 estudiantes y 80 centros repartidos por todo el mundo- se convierte en la primera universidad española que ofrece estos servicios a todos sus alumnos, ya que los planes de su refundación tecnológica prevén que el teléfono móvil sea el dispositivo de mayor uso para acceder a Internet, y se convierta de esta manera en la mesa de trabajo de su futuro alumnado, desde donde podrá acceder también a sus canales propios de televisión y radio digitales por Internet, que ya están en funcionamiento (http://teleuned.com)

Página inicial del portal CampusWAP.com

***CampusWAP.com* accesible desde los principales portales WAP de las operadoras españolas**

Figure 5. Campuswap.com: Example of e-learning services based on mobile telephony.

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Spoken conversations, also known as "*voice chats*", consist of various Internet users chatting simultaneously among themselves, each from their own computer, although, as a rule, the LMS anticipate that only one Internet user speaks, while the others listen.

On the other hand, a function which is on the increase in teletraining is a digital television channel, which enables the student to see and listen to a teacher giving a class from his own computer. On one part of the screen, slides will appear to illustrate the speaker's presentation. In some cases, the student can also send an e-mail to the teacher, so that questions can be asked.

III.2. Choosing the Ideal LMS

There are many comparative studies of LMS, carried out by consultants, specialist magazines, etc. Here are some of those published on the Internet (March 2002), which we recommend:

- *Evaluation of web-based course platforms* (learning environments) (http://www.edutech.ch/edutech/tools/comparison_e.asp), by Edutech.
- *Comparison of Online Course Delivery Software Products* (http://www.*marshall*.edu/it/cit/ebct/compare/comparison.html)
- *Online educational delivery applications: a web tool for comparative analysis* (http://wwwctt.bc.ca/landonline/choices.html), by the Centre for Curriculum, Transfer & Technology.
- *WebEd Tools Chart* (http://www.osc.edu/textonly/education/webed/Tools/chart.shtml), by the Ohio Supercomputer Centre.
- *Evaluation of Web-based Educational Systems* (http://www.abc.villanovaa.edu/proc2000/n115.pdf), by University of Macedonia.
- *WWW Online* Courseware *Development and Delivery Tools: Comparison and Contrasts* (http://www.aum.iawf.unibe.ch/did/didactica/ONLINE_COURSEWARE_TOOLS.pdf).

Despite the proliferation of comparative studies of LMS, they have hardly considered the specific features of CALL software, in which the functions that promote sound interaction should be more advanced.

On the other hand, the subject of standards has become relevant. It is logical that the user who introduces contents into a given LMS would want the guarantee of being able to use those contents within another LMS. This is because he/she might want to change LMS at any time, or because he/she might want to add or offer to a third party the contents of his/her current LMS.

Despite the diversity of standards for LMS, there is a growing tendency to consider SCORM (Sharable Content Object Reference Model) as the dominant standard. SCORM is an initiative led by ADL (Advanced Distributed Learning), which tries to draw together the other rival standards, like AICC, IEEE, and IMS.

IV. CONCLUSIONS

The growing use of the Web in the learning of modern languages has given birth to a new discipline, called Web Assisted Language Learning (WALL) which can be broken down in three important areas:

- The Web as a source of resources.
- The Web as a window of multimedia applications.
- The Web as an e-learning platform.

The area of WALL most likely to develop in the next few years is the use of the Web as an e-learning platform. This has already given birth to Virtual Centres for Foreign Languages.

The following observations should be made about these Virtual Centres for Foreign Languages:

- The teaching model they offer will not be exclusively Web based. They could also include phases of face-to-face tuition, when the aim is to develop oral skills (listening comprehension and especially speaking skills).
- The use of a particular LMS has very strategic implications, as it will also determine the teaching methodology that will be implemented.

Therefore, a thorough understanding of the basic and advanced functions of an LMS is very important in the development of the infrastructure of a Virtual Centre for Foreign Languages. On the other hand, all LMS functions that encourage both asynchronous communication (e-mail, discussion forums, etc.) and synchronous communication (chats, videoconference, etc.) are of great importance in the Virtual Centre for Foreign Languages, as they encourage interaction and the idea of a virtual community.

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Improving the Virtual Learning Development Processes Using XML Standards

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ABSTRACT

Distributed learning environments and content often lack a common basis for the exchange of learning materials. This delays, or even hinders, both innovation and delivery of learning technology. Standards for platforms and authoring may provide a way to improve interoperability and cooperative development. This article provides an XML-based approach to this problem created by the IMS Global Learning Consortium.

KEYWORDS: Distributed learning environments, exchange of learning materials, IMS Global Learning Consortium, XML, XML-based approach.

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I. INTRODUCTION

In the meantime, the digitalization of education materials has been advancing for some years and its necessity has been ubiquitously propagated. In fact, systems and materials for virtual teaching have been developed by corporations, universities and government agencies around the world since then. Aside from that, one can find a large number of more or less systematically constructed and maintained content on the Internet. For many involved in education the use of these resources became an integral part of their daily work routine.

Potential users of educational contents, however, whether they be students or teachers, often see themselves, in using the new technology, confronted with significant obstacles: every virtual learning environment follows its own understanding of the "correct" usability; the materials are often adapted to fit the lesson plans and needs of the respective providers and don't cover the requirements of third parties; file formats, such as PowerPoint and Flash applications, make it difficult to directly access parts of more extensive contents pertaining to one's own purposes. The list goes on.

II. TEACHING UNITS USING THE BUILDING BLOCK PRINCIPLE

If one considers these aspects together with the substantially higher effort in creating a virtual lecture hour, in comparison to conventional lectures, the demand for the reusability of digital teaching units, for the use of synergy and coupling effects, and for the disaggregation of complexly structured virtual lectures and seminars is not only understandable but also justified. The goal would be the efficient and effective compilation of digital teaching units using the building block principle.

Are such building blocks conceivable and how should they be constructed? An important feature would be file formats, which —if possible, platform independent— are not subject to limitations such as the above mentioned PowerPoint and Flash formats and support built-in mechanisms for structuring the contents, or rather the direct access to parts of documents. Moreover, information for interactive contents, such as exercises and simulations, should be codable in the document itself. Standards in the form of "templates", which take all criteria for the realization regarding content and didactic into consideration, are desirable for the support of the interchangeability of the materials and their efficient production. The same goes for problems with character sets which should especially be considered regarding foreign language training material. Application software for the creation and delivery of virtual teaching and learning units should again optimally support and transparently implement the developmental process.

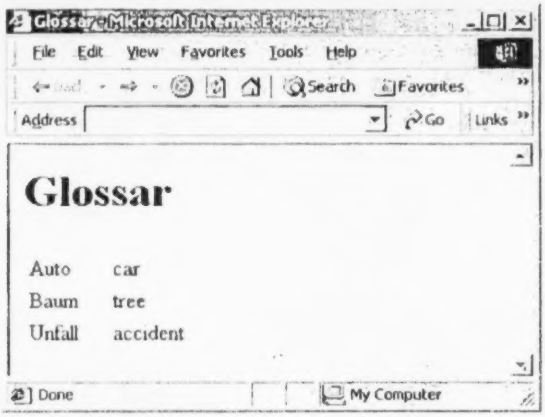
III. FLEXIBILITY AND PLATFORM INDEPENDENCE THROUGH XML

For a few years now the eXtensible Markup Language (XML) has presented itself as a solution for a flexible and platform independent production of digitized material. XML was introduced in 1996 with the goal of replacing HTML on a long-term basis as the *Lingua Franca* of the Web. HTML is a less flexible mix of directives for the structuring and presentation of documents — a large part of the HTML-elements, such as <H1>, <H2> and <EM>, serve to control the layout. In contrast to this, XML has some significant advantages: separation of structure, content and layout, the determination of markup elements —more specifically, its own Document Type Definition (DTD)—, mechanisms for the direct access to parts of the document, Unicode support and more.

The difference between HTML and XML becomes clear in an example from a simple glossary. The corresponding HTML-code (without header) could look like the following:

```
<body>

<h1>Glossar</h1>
        <p>
                <table>
                        <tr>
                                <td>Auto</td>
                                <td>car</td>
                        </tr>

                        <tr>
                                <td>Baum</td>
                                <td>tree</td>
                        </tr>

                        <tr>
                                <td>Unfall</td>
                                <td>accident</td>
                        </tr>
                </table>
        </p>

</body>
```

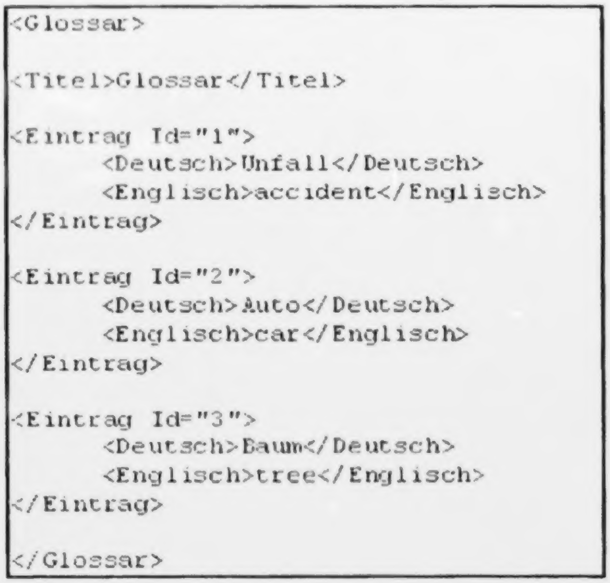
A Web-Browser displays these lines as in the following picture:


Glossar - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Search Favorites
Address Go Links
Done
My Computer

Glossar

Auto	car
Baum	tree
Unfall	accident

While only the determined directives are valid in the HTML-document, XML enables the insertion of its own markup elements such as <Glossary>, <Entry>, <German>, <English>, omitting any layout information and, moreover, — in contrast to the abstract HTML-elements <tr> (table row) and <td> (table data) — allows conclusions of the information provided. And the glossary as an XML-Document (without header) looks like this:



```
<Glossar>

<Titel>Glossar</Titel>

<Eintrag Id="1">
       <Deutsch>Unfall</Deutsch>
       <Englisch>accident</Englisch>
</Eintrag>

<Eintrag Id="2">
       <Deutsch>Auto</Deutsch>
       <Englisch>car</Englisch>
</Eintrag>

<Eintrag Id="3">
       <Deutsch>Baum</Deutsch>
       <Englisch>tree</Englisch>
</Eintrag>

</Glossar>
```

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The eXtensible Stylesheet Language (XSL) is used for displaying XML documents. It provides the functions and rules for the presentation of the XML elements. Not only can these mechanisms process XML documents for presentation in a Web browser as in the above example, but also for the output in many other formats such as the Portable Document Format (PDF). Moreover, the possibility exists, with the help of the XSL Stylesheets, to directly display parts of documents, while HTML-files must be completely loaded.

IV. STANDARDIZATION EFFORTS

The advantages, in particular which XML has over HTML in processing large numbers of similar documents, cannot only be used for glossaries, but also for interactive exercises, regional studies, grammar, etc..

The strength of the approach could, however, turn itself around if those involved in the production of teaching materials create "isolated solutions" in the form of their own XML document type definitions. The effort in adjusting foreign documents to insert in one's own environment is significant and, in terms of the mutual use of resources as in the context of virtual universities, uneconomical.

Given these problems, several organizations, such as the IEEE Learning Technology Standardisation Committee, the Advanced Distributed Learning (ADL) Initiative, the Aviation Industry CBT Committee (AICC) and the ISO/IEC JTC1 SC36 Learning Technology, have gone to trouble of getting standardizations in the area of virtual learning in the past. The IMS Global Learning Consortium, Inc. (IMS) is pursuing an additional, more promising approach. The members of the non-profit organization include, among others, a series of well-known companies, universities, and government agencies, such as Apple, IBM, Microsoft, Oracle, Massachusetts Institute of Technology (MIT), and the Open Universiteit in the Netherlands. IMS is speeding up the development and promotion of open XML-based specifications, which should specifically support activities in the field of distributed on-line learning, such as, for example, finding and using learning materials or the assessment of the progress and performance in one's studies.

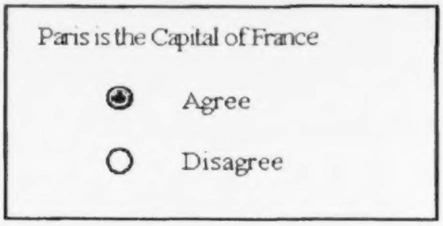
- The *Question & Test Interoperability Specification* (QTI) describes a basic structure for the representation of Item and Assessment. The specification enables the exchange of this test, assessment and results data between Learning Management Systems, as well as content authors and, content libraries and collections. It is extensible and customizable to allow for the immediate adoption, even in specialized or proprietary systems.
- The *IMS Content Packaging Specification* provides the functionality to describe and package learning materials, such as an individual course or a collection of courses, into

interoperable, distributable packages. Content Packaging addresses the description, structure, and location of online learning materials and the definition of some particular content types. The Content Packaging Specification is aimed primarily at content producers, learning management system vendors, computing platform vendors, and learning service providers. Learning materials described and packaged using the IMS Content Packaging XML format should be interoperable with any tool that supports the Specification. Content creators can develop and distribute material knowing that it can be delivered on any compliant system.

- The *IMS Learning Resource Meta-data Specification* was developed to counteract the fact that the now large number of software tools for the creation of learning materials lacks a common mechanism which finds and uses the materials. A meta-data specification ensures more efficient processes in finding and using resources, in which a structure of definable, descriptive labels would be offered, which would describe, or rather, catalogue the learning resources.
- The *IMS Learner Information Package Specification* is a collection of information about learners or producers of learning contents. The specification aims at the interoperability of Internet-based learning information systems with other systems which support the Internet learning environments. The goal of the specification is to define a number of packages which can be used to exchange data with learning information servers corresponding to the IMS-Specification.
- The *IMS Reusable Competency Definition Specification* plots out an information model to describe, to reference and to exchange competency definitions, primarily within the context of on-line and distributed learning. In this specification the word "competency" is used in a very general sense and incorporates skills, knowledge, assignments and learning results. This specification offers the functionality to formally present, independent of its use in a certain context, key characteristics of competency and to enable the interoperability among learning systems which delivers competency information.
- The objective of the *IMS Enterprise Specification* is to define a standardized set of structures that can be used to exchange data between different systems and to guarantee an integration, as optimal as possible, of training management systems in existing IT infrastructures.

V. APPLICATIONS

A simple example from the Question & Test Interoperability Specification gives the first impression of possible realizations of the specification. A true/false question without processing could be represented as an interactive exercise as follows:



Paris is the Capital of France

● Agree

○ Disagree

The corresponding formulation in QTI-XML shows the following code excerpt:

```
                  <questestinterop>
                          <qticomment>
                                   This is a simple True/False multiple-choice example using QTI V1.0 or V1.1.
Anm. →                             The rendering is a standard radio button style.
                                   No response processing is incorporated.
                          </qticomment>
                          <item ident="IMS_V01_I_BasicExample001">
                                   <presentation label="BasicExample001">
                                            <material>
Frage →                                              <mattext>Paris is the Capital of France</mattext>
                                            </material>
Eine Antwort →                              <response_lid ident="TF01" rcardinality="Single" rtiming="No">
Darstellungsformat →                                 <render_choice>
                                                             <response_label ident="T">
Wahr →                                                               <material><mattext>Agree</mattext></material>
                                                             </response_label>
                                                             <response_label ident="F">
Falsch →                                                             <material><mattext>Disagree</mattext></material>
                                                             </response_label>
                                                     </render_choice>
                                            </response_lid>
                                   </presentation>
                          </item>
                  </questestinterop>
```

The QTI code can be completely transparent for the user. Applications are now available (see, among others, http://www.imsproject.org/direct/jetproducts.cmf (10.29.2001)) which implement the specification in the form of Windows-, Java-, or HTML-based applications and enable learners and authors to work in the familiar Look and Feel. Nonetheless, the products of different manufacturers can exchange test materials among themselves, since the data, as in the above example, are available in QTI-XML format. QTI distinguishes between basic response and render types, from which a total of twelve types of answers can be derived, which, in part, are again variable, or rather, combinable.

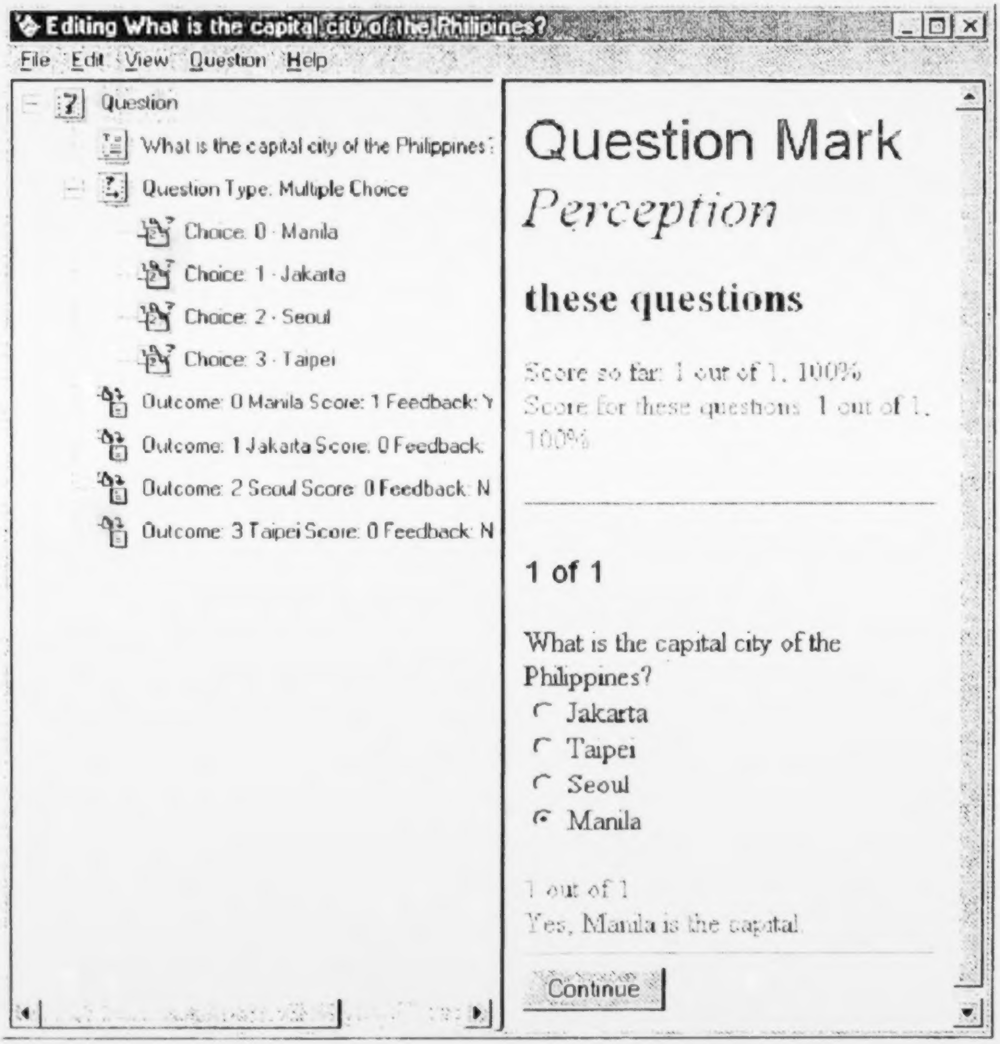
Response Types	Render Types
• XY co-ordinate • String • Number • Logical group • Logical identifier	• Choice • Hot-spot • Fill-in-blank • Slider • 'Object'

Detailed descriptions of the outlined specification of the IMS Global Learning Consortium can be found at the following Internet address: http://www.imsproject.org (10.29.2001). The relationship to other standardization efforts is also discussed there.

VI. SYSTEMS

There are a number of companies and institutes which are implementing the IMS specification, or rather, parts of it (see the following URLs http://www.imsproject.org/direct/getproducts.cfm (10.29.2001) and also http://www.imsproject.org/direct/getorgs.cfm (10.29.2001)). The range of functions, supported platforms, and price models of systems differ greatly. The palette extends from Windows-based applications for smaller groups to completely web-based environments.

The in- and export of teaching units conforming to the IMS implements for example, Question Mark's Perception for Windows and Perception for Web (http://www.questionmark.com (10.29.2001)). The creation of the materials takes place in the very easy-to-use Windows application Perception for Windows. At the same time, the creation of interactive contents is supported by Wizards and a variety of exercise types are offered. A database, included in the application, administers the teaching elements and also supports the creation of teaching elements in teams. The authors can test the results of their work in a preview window.


Editing What is the capital city of the Philippines?
File
Edit
View
Question
Help
Continue

Question
What is the capital city of the Philippines?
Question Type: Multiple Choice
Choice: 0 - Manila
Choice: 1 - Jakarta
Choice: 2 - Seoul
Choice: 3 - Taipei
Outcome: 0 Manila Score: 1 Feedback: Y
Outcome: 1 Jakarta Score: 0 Feedback:
Outcome: 2 Seoul Score: 0 Feedback: N
Outcome: 3 Taipei Score: 0 Feedback: N

Question Mark
Perception

these questions

Score so far: 1 out of 1, 100%
Score for these questions: 1 out of 1, 100%

1 of 1

What is the capital city of the Philippines?
○ Jakarta
○ Taipei
○ Seoul
● Manila

1 out of 1
Yes, Manila is the capital.

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Supplementary to Perception for Windows, the component, Perception for Web, permits the contents to be offered in the Internet. The elements previously developed under Windows do not need to be worked on any further for that. In addition, courses, course participants and instructors can be set up and managed through Perception for Web. Report functionalities allow for the assessment of learning progress and test results.

In the realm of Open Source, the Integrated Learning, Information, and Cooperation System (ILIAS) of the University of Cologne (see this address: http://www.ilias.uni-koeln.de/ios/index.html (10.29.2001)) and the Open Knowledge Initiative of the Massachusetts Institute of Technology(http://web.mit.edu/oki/ (10.29.2001)) are backing the specifications of the IMS Global Learning Consortiums. While OKI is still in the planning stages, ILIAS is already available in Version 2.x. The latter is an efficient, completely web-based client-server-system that offers tools for authors, personalized learning environments, administration tools as well as communication and collaboration tools.

VII. CONCLUSIONS

XML-based specifications for virtual learning environments are in a comparatively early stage of development. As in the case of other standardization efforts, some changes and augmentations are still to be expected. The involvement on the part of renowned manufacturers and education institutes suggests, however, that great importance is given to these types of standardization efforts.

The interchangeability of learning materials and their more efficient production, together with improved accessibility, communicate attractive features of this development. One's own experiences, which could be gained within the scope of XML-based projects for the creation of language learning materials, have been entirely positive. The cost of the development of language learning materials was not only reduced by the separation of content and layout, or functionality; the project contributors realized that the quality of the materials was also improved. Two aspects seem to compliment each other in this respect: first, it was possible for the authors to observe the developed XML-contents from the learner's perspective at any time and to be able to appropriately assess its appearance. Secondly, the XML-DTD, though developed for the learning application but, nevertheless, restrictive, removed the burden from the authors of all the questions concerning the layout and other problems which usually come up when creating HTML sites. Even the predefined document structure considerably improved the concentration in didactic and content of materials.

The question remains if it would be possible for smaller organizations to come up with enough financial and personnel resources for the operation of such client-server-systems.

Particularly in the university arena, a national approach with a central system management and user support would be conceivable and wise/practical.

LINKS

http://www.imsproject.org
The IMS Global Learning Consortium —provides XML-based specifications for E-Learning systems

http://www.imsproject.org/direct/jetproducts.cmf
Directory of Products and Organizations Supporting IMS Specifications

http://www.imsproject.org/direct/getorgs.cfm
Directory of Products and Organizations Supporting IMS Specifications

http://www.questionmark.com
Questionmark — a company developing IMS-complient products

http://www.ilias.uni-koeln.de/ios/index.html
ILIAS —an open source learning management system, which implements features for IMS compatibility

http://web.mit.edu/oki/
The Open Knowledge Initiative (OKI) is defining an open architectural specification to be used for the development of educational related software.

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Principles in Call Software Design and Implementation[1]

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ABSTRACT

This paper discusses a number of principles to bear in mind when designing and implementing multimedia language learning materials. Issues such as personnel and tools are briefly looked at. The general programme design principles referred to are based on courseware features such as log-on, menus and hierarchy, reference materials, utilities, student recording devices, feedback, progress reports and exercises. A general overview is given on the template approach to designing and creating a multimedia CALL package. Throughout the paper examples are given from the author's own experience in multimedia development for language learning purposes.

KEYWORDS: multimedia, development, design principles, CALL.

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I. FIRST CONSIDERATIONS

Designing and creating a multimedia CALL package is an extremely demanding task, calling upon a range of skills and meticulous attention to detail. Such is the complexity of computer programs these days that it is highly unlikely that a single person will have all the necessary skills to undertake a CALL development project alone. Team work is therefore essential, and each member of the team must have some understanding of the roles of the other members of the team. The language teacher who joins a software development team, for example, does not have to possess computer programming skills but s/he must have some understanding of basic programming concepts. Similarly, those responsible for the programming do not have to have knowledge of foreign languages, but they need a good understanding of natural language processing.

Once the decision has been taken to create a multimedia CALL package it is essential to consider:

- The target group,
- The language level of the target group,
- The purpose of the package itself — whether it is for general or specific purposes,
- The methodological approach
- And the appropriate use of technology.

A needs analysis taking into account both the learners' needs and the needs of the teachers/tutors who will be using the software should also be carried out. The results of a detailed survey will help us determine, not only the language contents and level our target group/s is/are particularly interested in, but also the most appropriate pedagogical approach to follow and how we can offer solutions through technology to enhance their learning process.

II. PERSONNEL AND TOOLS

Besides the subject specialist(s), a CALL project development team must have at least one member who is capable of using an appropriate programming tool, e.g.

- A dedicated CALL authoring programme such as Neuro Concept's *Speaker* Duke University's *WinCALIS* or Lavac, etc.
- A multipurpose authoring package such as Asymetrix ToolBook, Macromedia AuthorWare, Macromedia Director, etc.
- A high-level programming language such as C++, Delphi or Visual Basic.

A language teacher can achieve good results with a dedicated CALL authoring programme, however the multipurpose authoring packages mentioned above require a considerable degree of programming expertise in order to get the best results. A language teacher can achieve reasonable results with such packages if s/he is willing to persevere, but the time taken to learn a complex package such as Macromedia Director will probably outweigh the benefits. A professional programmer might feel more at home writing in a high-level programming language such as Visual Basic or C++, both of which the average language teacher would not consider using. Unless the language teacher decides to do it alone —which is inadvisable— a CALL development project requires, at the very least, close collaboration between language teacher and programmer.

An important factor to bear in mind also at an early stage is graphic design. A programme may be very well designed content-wise and it may run very smoothly, but it will fail to achieve its aim if careful graphic design is not taken into account. It is highly desirable to call upon the services of a qualified graphic designer to produce pictures and icons, and to give advice on fonts, colour, screen layout, etc. Such a person will be familiar with design packages such as Adobe Illustrator and Adobe Photoshop. Graphic designers often have a background in photography. If not, the services of a professional photographer may also be required —or, at the very least, a very good amateur photographer.

Finally, a sound engineer and video technician will be required if the package is to contain substantial amounts of sound and video. They should be familiar with software tools for manipulating sound and video.

III. GENERAL PROGRAMME DESIGN PRINCIPLES

III.1. Deciding on Courseware Features

Once we know the content requirements, language level and learning needs of our target group, we must decide what the general courseware features aim to be. We may be designing materials for completely autonomous learners, in which case we may intend to include as many tools as possible in order to support self-access learning (by providing reference materials such as grammar notes, explanations on functions of language, cultural context of the target language, a sound-enhanced dictionary or glossary, student assessment, notepad, etc.) or a more tutor-guided package in which, in addition to those mentioned above, we may think of including tools that will support the teacher such as a teacher's guide, detailed student assessment reports, tracking devices, etc.

One of our basic aims when designing a multimedia CALL package should be to provide the learner with all the necessary tools that will encourage language awareness and enable him or her to discover the intricacies of its use for themselves with the aid of the programme. To achieve this, it is crucial that the design specifications of the programme are as detailed as possible.

III.2. Log-on, Menus and Hierarchy

First we must consider what the function of the entry screens are going to be. For example, we may wish to include a log-on system that enables language tutors to identify their students in order to assess their work at a later stage during the course; we may wish to include several support languages, therefore its selection would also take place on entering the programme; or we may wish to include an on-line registration system that will allow the learners to communicate with their tutors via e-mail, etc. The log-on screens will naturally lead to a main menu screen to identify the way in which the course contents have been organised as well as being the gateway for the learner to choose the route s/he is going to follow throughout the course. It is always convenient to offer a default route to guide learners through the programme but without forgetting that one of the advantages of multimedia courseware is precisely its non-linear access to the materials. Whenever possible it is advisable that all the courseware contents be visible in order to avoid unnecessary frustrations as to how big or small the programme might be —whereas students and teachers are accustomed to flipping through text books and gain a good idea, with just a first glance, of what the book may contain, in multimedia software this is normally not true because most of the contents tend to be hidden. To illustrate two different ways of courseware content structure, let us have a look at the main menu screens of *Español Interactivo* and *Español en marcha*.

In *Español Interactivo,* as we can see below, the contents are organised into five modules (Fig. 1), each dealing with a given topic, and each of these is in turn divided into four study units (Fig. 2), each relating to a particular sub-topic. Having chosen a unit, the learner is offered the learning goals underlying that unit and is presented with the actual activity contents screen (Fig. 3).

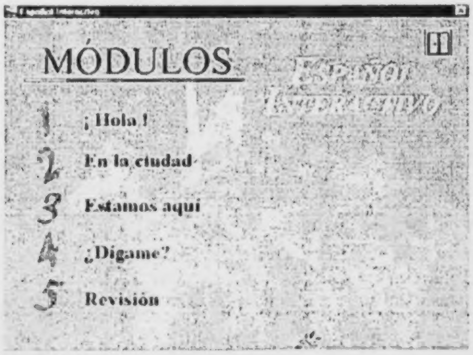

Figure 1: Modules

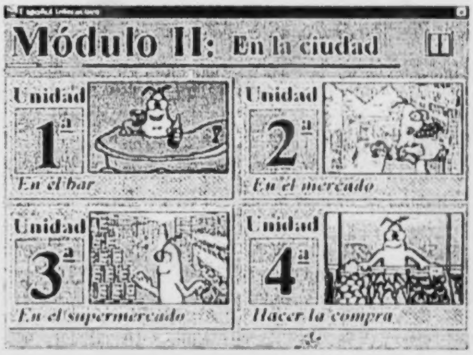

Figure 2: Units

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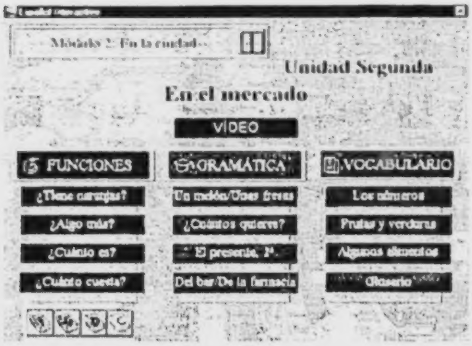
Módulo 2: En la ciudad
Unidad Segunda
En el mercado
VÍDEO
FUNCIONES
GRAMÁTICA
VOCABULARIO
¿Tiene naranjas?
Un melón/Unas fresas
Los números
¿Algo más?
¿Cuántos quieres?
Frutas y verduras
¿Cuánto es?
El presente, 1ª
Algunos alimentos
¿Cuánto cuesta?
Del bar/De la farmacia
Glosario

Figure 3: Activities

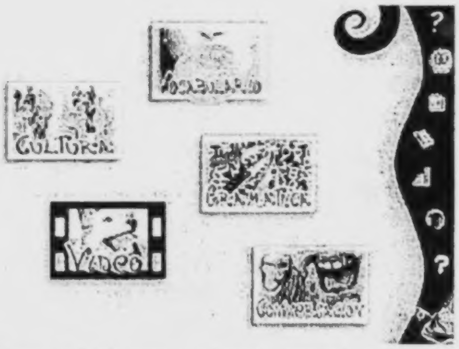
VOCABULARIO
CULTURA
GRAMÁTICA
VÍDEO
CONVERSACIÓN

Figure 4: Main menu screen in *Español en marcha*

Every activity contents screen within the programme is arranged according to four main sections (video, language functions, grammar and vocabulary) and the activities within each section are related to the main topic underlying that study unit. Organised thus, it is intended that learners will follow the suggested progressive order and focus on the language components being practised in a given section. It is a means of dosing the language skills to be practised as well as a means of presenting language without stripping it from its context.

Another, perhaps more direct, way of presenting the contents to learners can be found in *Español en marcha*. Here, after selecting the support language, the main menu page displays five main sections —culture, video, vocabulary, grammar and conversation—, and the exercises are arranged according to their primary focus although in many cases they are interrelated. Each of these menu items gives access to a contents page listing all the activities. This method of arranging contents is generally preferred by teachers who intend to use the software as a complementary aid to their regular classes since it allows them to visualise the contents of the course in a more straightforward fashion than the previous example, which is more learner-centred.

When designing a multimedia language course we must always bear in mind what technology has to offer and how to make the most of it to the advantage of our students. Great care must be taken in drafting the global structure of the course taking into account all the links, resources, utilities, etc. we are going to include, all of which have to be consistent throughout the programme. The hierarchy of all the elements must be clearly structured to serve two basic aims; first, to allow the software programmer and graphics designer to visualise the entire programme, and second because it will also allow the language specialist to balance the contents, whether reference sources or actual activities. A common way to go about this is by creating a branching diagram specifying each of the elements integrating the hierarchy. The following is an example taken from *¡Bienvenido a bordo!*, composed of seven sections, each of these divided into a varying number of lessons —ranging from 4 to 11— and each lesson, in turn broken up into six activities. The total number of exercises amounts to over three hundred, therefore a hierarchical structure of the programme became crucial for the software programmer and the language specialist alike to bring all the elements together.

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Sections	**Lessons**	**Activities**
1. *En el mostrador de facturación de equipaje*	1. *Sólo llevo equipaje de mano*	1. Dialogue
2. …		2. Grammar Explanation
3. …		3. Language Practice 1
…		4. Language Practice 2
7. …		5. Vocabulary Practice
		6. Language Lab.
	2. *Sí, viajamos juntos*	
	3. *Es imposible facturar hasta el destino*	
	…	
	7. *He perdido mi pasaporte*	
	8. *Llevo sobrepeso de equipaje*	

Table 1: Hierarchical structure of the programme

A hierarchical structure will also be indispensable to determine the programme's navigation system. Due to the intricate structure of CALL software, menus and sub-menus have to be clearly specified and back tracking options sometimes given so that our learners do not get lost in the programme maze. To this end a pull-down menu item or an icon should represent the following four actions: "back", to back track our steps; "next", to go to following item in chain of events; "menu", to return to previous menu in hierarchy; and "exit", to quit the programme.

III.3. Reference Materials

It is always advisable to allow access to all the reference materials at any point in the programme. Among the more common items normally included we might find: grammar explanations, use of language (or language functions), notes describing the cultural context of the target language, a sound-enhanced dictionary or glossary (which can of course be monolingual, bilingual or multilingual according to the needs of our target audience), etc. Linking these reference sources to the activities can be achieved very easily by including icons on the exercise screen that will call up a particular reference item. In the example below we can see a number of button icons representing four electronic reference books. These can be accessed either from within an exercise to respond to a particular question which may arise during the study process, in which case an additional window opens up instantly revealing the relevant explanation (which also saves time in having to look up an item in an index page), or they can be approached individually as self-contained sources in their own right and comprise their own navigation system by means of hypertext links. In writing these reference materials we should aim at including only what is relevant and appropriate for the course level and avoid superfluous explanations or going into a lengthy discourse that does not match the linguistic features exploited in the programme.

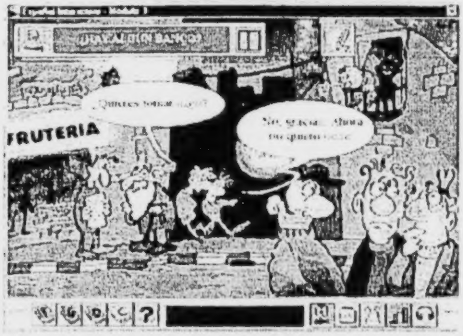

Figure 5: Grammar exercise taken from *Español Interactivo*

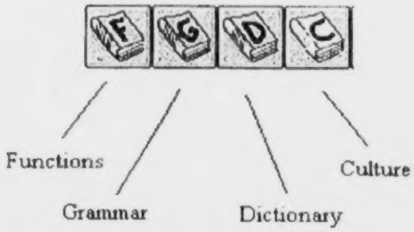

Figure 6: Detail of reference sources

III.4. Utilities

The utilities provided in the programme must also be consistent throughout. There are, of course, a large number of items that prove useful to learners. These can be presented either by means of icons discretely located on the screen or as a pull-down menu such as the ones found in any Windows-based programme. Among the more useful ones are:

- Help/instructions. We must distinguish between programme instructions —what the basic programme features are and how they operate—, help in the sense of giving a set of instructions to carry out an activity/exercise, and help in the sense of providing learning support and explanations referring to the target language. It is advisable for the latter two to appear as an additional item within the activity screen.
- A notepad to allow learners to take notes during their study process.
- A printer to enable learners to print a selection of text, such as grammar explanations, video/audio scripts, instructions, etc.
- Subtitles on/off to turn the script of a particular audio/video passage on or off. This utility enables us to create activities with two different levels of difficulty, i.e. an easier version of the exercise will be provided when subtitles are visible. We therefore recommend the default mode to appear with the subtitles turned off.
- Sound on/off to enable or disable all additional sounds which are not strictly necessary to complete an activity, i.e. audio instructions, positive/negative feedback, etc.
- Progress reports/student assessment reports to allow learners and/or tutors to check on the learner's performance in each exercise, session, etc.
- A recording device to allow learners to record their own voice and compare it with a model.

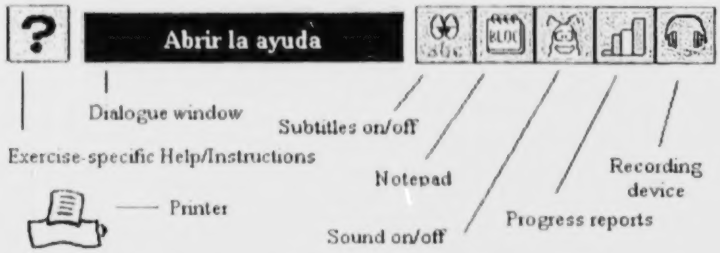

Figure 7: Icons representing programme utilities in *Español Interactivo*

Although it is not advisable to use an excessive number of button icons, which might end up overcrowding the screen, we do recommend that however many icons are finally used, they should always appear in the same position throughout the programme. The graphical user interface must be as simple and as intuitive as possible at all times.

III.5. Student Recordings, Audio and Video

It is always beneficial to provide some sort of recording device that will allow learners to record their own utterances and compare them with pre-recorded models or provide graphical representations of their language input wherever possible. Some of the more entertaining activities are those where students can insert their own recorded versions of a dialogue, for example, and listen back to their own version in an attempt to simulate "real life" communication.

Interactive exercises of this type can be based on audio fragments, accompanied by illustrations or pictures, or complete video sequences. They can focus on pronunciation practice at word, sentence or discourse level. Creating exercises based on dialogues and requesting students to play the role of one of the characters is, to this day, one of the closest ways we can get to authentic communication in a CALL programme. These exercises are also very appropriate for pair work or collaborative learning —we can request two fellow students to record themselves and recreate a given dialogue completely, thereby doing away with the solitary task of studying with a language programme on one's own. Simulations between more than two or three characters are unadvisable to avoid interference on language retention.

Below are two examples taken from *Valencià Interactiu*. Fig. 8 illustrates the recording device linked to all the interactive exercises and Fig. 9 shows the video recording "studio" linked to video simulation activities. The utterances recorded by students can be stored, for the learner's future reference or for the tutor's supervision, in the temporary file directory although tutors must be reminded to delete these files now and then in order to save space on local hard drives.

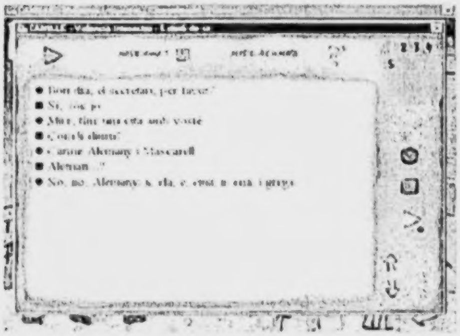

Figure 8: Activity audio recording utility

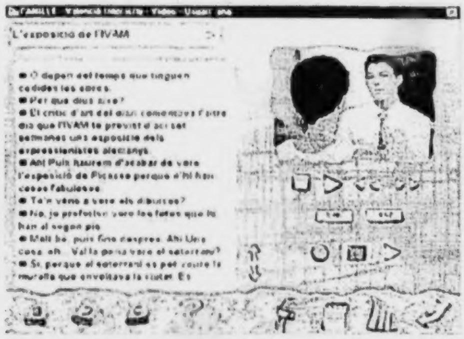

Figure 9: Video synchronised audio recording utility

Any student recording device in a CALL package should include such functions as:

- Play: to play current audio/video sequence
- Pause: to pause current audio/video sequence
- Instant replay: to instantly play current audio/video sequence from the beginning
- Fast forward: to play current audio/video passage fast forward and enable search
- Record: to record learner's voice
- Replay recording: to replay learner's last recording or sequence of recordings
- Compare: to compare learner's recording with pre-recorded model
- Subtitles/script: to show subtitles or full script of current audio/video passage

Since the storage capacity of CD-ROMs (or DVDs in the near future) can handle large amounts of audio, we must always take advantage of this media and include as much sound as possible in our courseware. It is no doubt beneficial to expose learners to as much authentic language as possible. Audio can be included in innumerable ways with or without text reinforcement —to give instructions, feedback, glossaries, exercise input, etc.— and will enhance the programme features considerably. Small amounts of audio can be recorded digitally using a high quality sound card —e.g. SoundBlaster— on our personal computer, edited with one of the many audio editing tools available —e.g. *Cool Edit*— and stored as an audio file in Windows PCM waveform format (.wav), for instance. The normal audio specifications for reproduction on a standard PC would be: a sample rate of 11025 Khz, mono, and a 16-bit resolution.

An important factor concerning audio is, of course, the quality of the sound recordings. We would recommend recording large amounts of audio at a professional studio with professional actors and actresses —which can actually work out cheaper than working with amateurs who may have to do numerous retakes over several days. When writing the materials, remember to keep careful track of what has to be spoken by a female or male voice —this can save a lot of time. The cost of video production can in many cases be decreased by using *chroma key*[2] background settings in a studio rather than filming on location. This also has the advantage of allowing more control over the sound quality and avoiding unwanted noise from cropping in. Video can sometimes be replaced by using a sequence of

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synchronised still pictures and audio. The effect for language learning purposes can be remarkable and is considerably cheaper.

III.6. Feedback

Since one of the advantages of multimedia technology is the computer's immediate response to a mere touch of a key or mouse click, this is very useful when dealing with positive or negative feedback in reaction to the learner's performance in completing an activity or exercise. Learners, we have observed, tend to find it encouraging to read or hear immediate positive feedback when they have completed an exercise successfully.

A considerable variety of positive or negative text, audio or text and audio messages should appear/be heard at random and should be graded according to learner achievements. In a number of exercises feedback can be programmed depending on the number of attempts and a specific score given to each of these. We should include appropriate feedback for a "correct answer", a "partially correct answer", an "incorrect answer", or even exercise-specific feedback when a combination of options are required in order to complete an exercise successfully. An adequate way of offering positive feedback, for example, could be to have the audio file of a particular exercise play when a correct answer is given. Negative feedback, of course, has to be meaningful. It should always be clear what kind of mistake has been made and the feedback should provide not only awareness as to where the mistake lies, but also how to improve the learner's performance. Wherever possible we must avoid abrupt statements such as "No", "Incorrect, try again", but instead provide constructive criticism and try to anticipate and predict our learners' behaviour when completing an activity. This may be achieved by carrying out —prior to the design stage— an error analysis based, for instance, on L1 interference.

III.7. Progress Reports

Simple activity-based progress reports or more elaborate student assessment reports are of great value for both autonomous learners as well as for tutors intending to supervise their students' work. A simple scoring device indicating the number of correct answers out of a total can become a challenge that some students find motivating. In addition to the scoring device, we may choose to include a chain of score-dependent comments also aiming to encourage the learner to continue progressing.

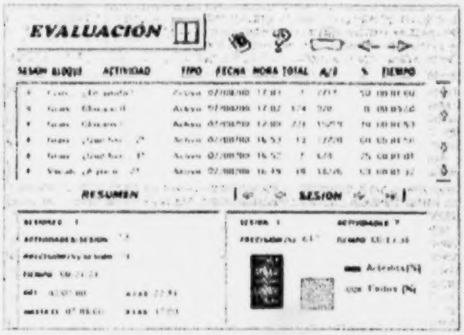

Figure 10: Student assessment —session report

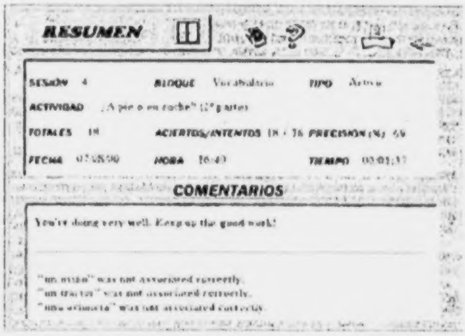

Figure 11: Student assessment —activity report

Figure 10 above is an example student assessment report taken from *Español en marcha*. The report summarises:

- The number of times learner x has logged on to the programme
- The amount of activities carried out per session
- Total time spent using programme
- Date and time of first session
- Date an time of last session
- Statistics showing average percentage of correct and incorrect answers per session and a table indicating, for every session, the names of the activities carried out, the section they belong to (grammar, vocabulary, etc.), the type of activity (passive/observation or active/production), the date, the current time, the total number of performances required by the learner to complete the activity, the number of correct answers in relation to the total number of attempts, the percentage of correct performance, and the time spent on the activity.

Figure 11, also taken from *Español en marcha,* illustrates a more detailed activity-based report. In addition to the information described above, by selecting a given activity, the learner or the tutor can further scrutinise the results achieved in a given exercise and instantly see where the difficulties may lie. For the benefit of autonomous learners primarily, a link from a given activity report to that particular activity would no doubt be greatly appreciated since it would save time in having to search for it through the content menus.

Since students, we have observed, are very keen on testing themselves and enjoy the challenges of being given a time limit, another useful way to monitor learner performance is to create activities that are time dependent. These activities are especially suitable for exam type entry and post-level achievement tests. A choice of time limits can also be given for a set number of questions in order to provide different levels of difficulty.

Figure 12 (below) shows a time dependent activity taken from *City Talk.* Displayed in the lesson plan (bottom right hand corner of the screen) are the five options available under the heading Quiz in the Reference pull-down menu. The options are: a 90 question quiz, random 30 questions, random 50 questions, timed 30 questions (25 seconds per question), and

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lastly, timed 50 questions (15 seconds per question). All the questions are related to the grammatical, functional and notional contents practised throughout the programme. All five options provide an achievement scale for the learner to determine how well his or her performance has been in carrying out the test. All the reference materials, as well as the dictionary, remain available.

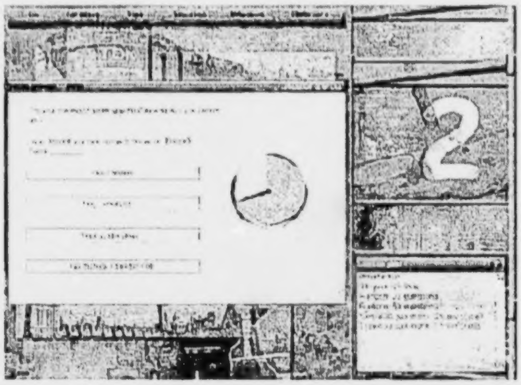

Figure 12: Time dependent activity

III.8. Exercises

When designing exercises for a CALL programme we must ensure variety, coherence, and consistency. Our materials must be based on sound pedagogical principles and firmly grounded on the methodology/ies we have chosen to follow. An attractive graphical user interface will enhance these qualities. We should try to avoid simply transforming typically textbook-type exercises onto a screen and instead try to be as creative as technology (and the software programmer) will allow us. Because technology moves so fast it is convenient to look ahead towards the future and try to envisage what the new tendencies might bring about in computer assisted learning.

One thing to bear in mind when writing exercises is that many of the more traditional activities such as multiple-choice and gap-filling exercises can be designed to function according to several modalities. For instance, a gap-filling exercise could also be designed as a multiple-choice exercise if the learner has to fill in a blank space from a list of given options, or as a drag-and-drop exercise if the learner has to select an item from a given list and drag it into a blank space. It is therefore advisable to combine as many different modalities of a sole exercise type in order to avoid repetitions that could perhaps result in our learners' boredom.

To put it schematically and focusing only on how an activity operates, a simple gap-filling exercise at word level in a given sentence, for example, could appear on screen in any one of the following ways:

1. Recorded audio input. Learner typewrites a whole word in a blank space. Learner hits enter key to check answer. If correct, audio recording is heard (positive feedback). If incorrect, appropriate negative feedback.
2. Learner typewrites a whole word in a blank space, choosing from a given list. If correct, audio recording is heard (positive feedback). If incorrect, space goes to blank again. Negative feedback.
3. Out of a number of options, learner drags and drops choice into blank space. If correct, audio recording is heard (positive feedback). If incorrect, space goes to blank again. Negative feedback.
4. Multiple choice: learner clicks on appropriate word from a given list. If correct, word appears in sentence and audio is heard (positive feedback). If incorrect, negative feedback.
5. Learner clicks on blank space and a window displays a number of options. Learner moves pointer to select option. Selected word fills blank space. If correct, audio is heard (positive feedback). If incorrect, negative feedback.

In "open input" type exercises where learners are requested to actually type in text (1 & 2 above), rather than choosing from a number of options (3, 4 & 5 above), it is always convenient to allow learners to make mistakes as long as we provide appropriate feedback and encourage a further attempt —a process similar to that found in spell checkers where incorrect/unknown words are highlighted but not automatically corrected for us.

Although the above modalities belong to a sole exercise type —filling in a blank space—, when they are exploited in a programme, a learner is under the impression that the exercises are completely different. Using a combination of these would therefore contribute towards gaining variety and diversity in our materials. The choice of one or another modality will of course depend on the primary objective of the activity itself. We should always ask ourselves what the learner will gain in terms of language acquisition. If we cannot find a substantial answer to this question, then the activity must be reconsidered.

Consider, for example, modality 1 above. This type would be appropriate if it comes after an "observation activity", a passive activity in the sense that we request the learner to observe, for instance a grammatical structure (e.g. comparing both forms of the verb "to be" in Spanish, *ser* and *estar),* and then ask him/her to participate more actively, to further explore the use and meaning of language and write the appropriate form of either verbs, providing perhaps a hint, but no options to choose from. Here we are asking the learner to actually write, allowing him/her to make mistakes, to actually put some effort into memorising all the possible verb forms. If the learner has to write the word in response to an audio input, s/he will additionally have to listen, interpret and then react (write the correct verb form). This modality is better suited for more advanced language practice.

In examples 2 to 5 above, there is no initial audio input. Instead the audio sequence becomes the positive feedback when the correct answer has been given. This does not mean that there is no stimulus for the learner to react to. We could obviously include sound or illustrations to prompt our learner. The difference, however, between modality 2 and modalities 3, 4 and 5 lies in the fact that in the former the learner again has to write (and there is therefore more at stake), whereas in the other three a mere choice of option is requested. These modalities are better suited to lower level language practice.

The many combinations of elements available in multimedia —text, audio, graphics and video— allow writers to create appropriate exercises/activities that suit a particular learning need. Computer assisted language learning is particularly suited to a communicative approach to language acquisition. Language can be presented both in terms of its structures (grammar, vocabulary, etc.) as well as in terms of its communicative functions; thus, our students will be able to learn linguistic structures, establishing relationships between structural and communicative functions in order to develop communication strategies in the target language. The functional and structural content of the course can be designed to encourage a range of communicative skills, bearing in mind that these are carried out within a specific social and cultural context.

IV.THE TEMPLATE APPROACH TO AUTHORING

This section looks at the template approach to designing and creating a multimedia CALL package. In the template approach to software development, content and functionality are distinguished so that the subject specialist —known in technical jargon as the content provider— and the programmer can work independently for a large part of the development process.

The task of the content provider in a CALL development project is not just to write texts in the target language. His/her job includes a range of tasks: e.g. besides writing texts, to write items for a range of different exercise types, to specify pictures that should accompany texts and exercises, to write scripts for audio and video recordings, to specify how the learner should progress through the programme, etc. The task of the programmer is to make everything happen according to the wishes of the content provider. It is essential that the content provider spells out in precise detail what is to appear on screen and what should happen as the learner interacts with the programme, in other words, a full description of what is known in technical jargon as an *event*. The programmer can advise on the feasibility of certain events, indicating to what extent the content provider's wishes can be carried out within the budget and time constraints of the project. The content provider and programmer have to agree on the exercise types, reference materials and overall functionality of the software before the main design phase actually starts. To this end a set of templates have to be worked out, into which the content provider slots the texts, exercise items, feedback, help notes, etc., and clarifies to the programmer how the different building blocks of each event are to be assembled[3]. A template looks rather like a form that has to be filled in, providing the programmer with the essential information that he/she needs in order to assemble the building blocks —known in technical jargon as assets. The assets of a CALL package might consist of:

- texts
- exercises
- photographs
- graphics
- audio recordings
- video recordings
- button icons
- pull-down menus

These assets are normally created and held outside the programme itself. For example, a word-processor might be used to write texts and exercise items, and photographs might be taken with a digital camera, stored in JPG format and manipulated with a graphic design package. The advantage of holding the assets outside the programme is that they can easily be altered without the intervention of the programmer. The content provider may, for example, find a number of typing errors in a text. These can be corrected in a word-processor and then the revised text file can be handed over to the programmer for incorporation into the programme. Similarly, the graphic designer may need to crop or retouch a photograph, or even replace it with a completely different photograph for a particular event —all of which can be done without constantly referring to the programmer. The task of producing different language versions is also made easier, as translators can simply create a new set of text files in the required new target languages.

A system of labelling all the events and assets has to be agreed, each event and asset being given a unique label, i.e. a name and/or number, so that it is clear what is being referred to. As an example, a labelling system could perhaps consist of:

- A letter to indicate the target language (which is useful when working with a team of colleagues creating several language versions).
- Five digits: the first one, running from 1 to 9, indicating Section/Module/..., the next two indicating Lesson/Unit/..., and the last two indicating Activity/Exercise/..., each running from 01 to 99.
- Two digits to number pictures, photographs, graphics, video, etc. running from 01 to 99.
- The appropriate extension, i.e. .txt, .doc, .bmp, .wav, .avi, etc.

which would make each label look something like E5010310.wav, meaning this is the tenth audio file in exercise 3 of lesson 1 in module 5, in an English language course. It is always advisable to keep the labelling system down to 8 characters to avoid incompatibilities with some software programmes.

In the course of the initial process of consultation, the content provider and programmer will draw up a list of activities and exercise types. These may include:

- Multiple-choice exercises. Virtually all CALL packages include multiple-choice exercises —which may take a variety of forms: single-selection (when only one option is correct), multiple-selection (when more than one option is correct), select by number, select by clicking on icon, etc. In fact the combinations of question and answer can be: audio-audio, audio-image, audio-text, text-audio, text-image, text-text, image-audio, image-text. This exercise type is especially appropriate for checking reading or listening comprehension.
- Gap-filling exercises. Virtually all CALL packages include gap-filling exercises —which may take a variety of forms: open input (where learner types text), select from set of possible answers, drag-and-drop, etc.
- Language lab and prompted speaking activities. This type of exercise became possible with the advent of the MPC and now features in most CALL packages. Language lab activities are useful when we would like students to record their own voice and compare it with a pre-recorded model. The recorded model may range from isolated words, sentences or larger units of meaning such as exchanges in a dialogue. An interesting type of prompted speaking activity combines video and student voice recording.
- Clickable text on screen. This is a useful feature of CALL packages, allowing the student to call up audio, text or image files simply by clicking on words and phrases on screen. It can be very useful, for example, to provide reinforcement grammar notes or to illustrate use of language within the broader context of a specific exercise.
- Clickable image on screen. This exercise type may be used when students are requested to click on a number of "hot spots" on a picture or image or click on a number of picture items, in reaction to a written or audio input. For example, an activity to practice locations, where a map is displayed, and after hearing an audio input, the learner has to click on a specific place/item on the map. A less active modality of this exercise type is useful for introducing new vocabulary —having learners click on a picture or a selected area of a larger image with the effect of an audio fragment being heard and, optionally, its written version being displayed.
- Matching exercises. In this typology learners have to match two lists of items in any of the following combinations: text-text, text-image, text-audio, image-text, image-audio, image-image, audio-text, audio-image or audio-audio. The association of elements can be carried out by moving the second list of items to match the first list or, alternatively, both lists may remain static on the screen and matched by clicking consecutively on one and another item and indicating correct match with, for example, arrows or simply playing an appropriate audio sequence. The matches can of course be 1 to1 (single-selection) or 1 to more than one (multiple-selection). The above combinations provide a considerable number of variations so as to allow writers to create a fair amount of entertaining as well as didactically efficient activities.
- Drag and drop exercises. A key feature of many CALL packages. Practically any type of exercise can be presented as a "drag and drop" activity: gaps can be filled by dragging text into blank spaces, matches/associations can be made by dragging one

item (text, picture, etc.) over another. Yet there are a number of activities that do not fall into any of these categories, for example classifying exercises, which can be suitably solved by dragging items from one place to another over the screen.

- Reordering exercises. Also a key feature of many CALL packages. Reordering, or putting a number of items in their correct sequence, can take place vertically —reordering a dialogue, for instance—, or horizontally —reordering words/expressions in a sentence, for instance. Items to be reordered or placed in a specified sequence could also be pictures or audio sequences.
- Open-input exercises. Since it is very difficult to anticipate student errors and the number of programming variables involved so high, open-input exercises are useful, for example, in activities where the learner is requested to write —whether on the computer or not—, such as in free writing exercises where a model would be provided rather than a correct answer. It is also suitable for dictation or translation activities.
- Branching dialogues. These are a common feature in many CALL packages. They consist of dialogues in which a character on screen interacts with the language learner, who plays a role in a dialogue or series of dialogues that can branch in different directions depending on the learner's responses. The learner chooses from a set of given responses —since open-input from the learner would obviously be difficult to analyse. Branching dialogues can be based on a video sequence or on an audio file with accompanying still pictures. When designing a branching dialogue, it is useful to visualise the course of the dialogue by means of a diagram where we can also indicate the score given to each of the options provided.

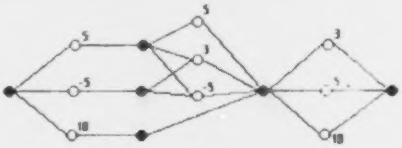

Figure 13: Diagram illustrating branching exercise. The numbers represent scores

The above list of templates is only a small selection of the many templates that language specialists and computer programmers might use in order to design a CALL package. Computing today allows well over thirty possible combinations of elements (audio, text, graphics and video) in a CALL program. By making discrete use of this huge choice it is possible to create attractive exercises and activities that enhance the interactive quality of the final product, avoiding repetitive and monotonous exercises that decrease students' motivation. All the elements that comprise a multimedia package are interconnected, so the templates must contemplate every single feature that appears on the screen at a given moment, e.g. links to and from exercises to reference materials, media to be included, etc.

NOTES

1. The findings outlined here comprise some of the ideas conveyed in *Information and Communications Technologies for Language Teachers* (www.ict4lt.org) and further explored in *CALL Software Design and Implementation: the template approach*, Valencia, SP-UPV, 2002.

2. A technique commonly used in TV by means of which an image is inserted into another, achieving the effect of one sole image. For example, recording a live person speaking with a photographic background. It is possible to achieve a very realistic effect suitable for language learning purposes.

3. However, this approach can be as simple as designing a series of word documents or as complex as producing an authoring shell.

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Integrating Corpus-based Resources and Natural Language Processing Tools into CALL

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ABSTRACT

This paper aims at presenting a survey of computational linguistic tools presently available but whose potential has been neither fully considered nor exploited to its full in modern CALL.

It starts with a discussion on the rationale of DDL to language learning, presenting typical DDL-activities, DDL-software and potential extensions of non-typical DDL-software (electronic dictionaries and electronic dictionary facilities) to DDL .

An extended section is devoted to describe NLP-technology and how it can be integrated into CALL, within already existing software or as stand alone resources. A range of NLP-tools is presented (MT programs, taggers, lemmatizers, parsers and speech technologies) with special emphasis on tagged concordancing.

The paper finishes with a number of reflections and ideas on how language technologies can be used efficiently within the language learning context and how extensive exploration and integration of these technologies might change and extend both modern CALL and the present language learning paradigm..

KEYWORDS: Concordancing, corpus linguistics, data-driven learning, electronic dictionaries, human language technologies, linguistic corpora, machine translation, morphological generation, NLP-tools, parsing, POS-tagging, speech technology

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I. INTRODUCTION

The use of concordancing in literature and linguistic analysis is nothing new. It started well before computers existed. Tribble and Jones (1990) trace the history of concordancing from the 13th century, when Hugo de San Charo enlisted 500 monks in producing a complete concordance of the Latin Bible. That is, a kind of reference work designed to assist in the exegesis of the Bible, consisting of all occurrences of terms, names, etc., that were felt to be significant, and presented these terms in a way that would help the researcher.

Of course, current applications of concordances in language and literature are not so labour intensive. The use of concordancing as a tool for language learning/teaching is relatively recent, starting in the 1980's, when computational power began to get scaled into small, affordable personal computers.

Succinctly, a concordance is a data arrangement technique that transforms texts into lists, printing lines of text where the word or expression interested in investigating is displayed in the centre of line, know as *KWIC* (Key Word In Context), within an arbitrarily selected context of characters or words to its right and left. This technology permits that, for example, a language teacher or learner interested in knowing the use of the preposition *of* to transform a text such as:

```
What be more important or intriguing than our own origins? Like all animals
we come from one cell that develops into an embryo which forms the adult.
This embryonic development presents a fundamental problem of biological
organization. From the single cell, the fertilized egg, come large numbers
of cells -many millions in humans- that consistently give rise to the
structures of the body. How do these multitudes of cells become organized
into the structures of, for example, our body -nose, eyes, limbs, and brain?
What controls their individual behaviour so that a global pattern emerges?
And how are the organizing principles, as it were, embedded or encoded
within the egg? It is remarkable that a cell as overtly dull and
structureless as the fertilized egg can give rise to such varied and complex
forms. The answer lies in cell behaviour and how this behaviour is
controlled by genes.
```

Into the following format:

```
... presents a fundamental problem [[of]] biological organization.
      ... egg, come large numbers [[of]] cells -many millions in ...
       ... rise to the structures [[of]] the body. How do ...
      ... How do these multitudes [[of]] cells become organized into...
 ... organized into the structures [[of]], for example, our body ...
```

Clearly, what this technique does is to make the invisible visible for teachers and learners. Patterns and structures that would else hardly be immediately recognisable, spring to the eye.

II. A WORD ON *DATA-DRIVEN LEARNING*

There is ample discussion in the literature on the merits of linguistic corpora in second language teaching and learning (Aston 1995, 1996, 1997; Ball 1995; Barlow 1992, 1995; Burnard and McEnery 1999; Celce-Murcia 1990; Collins 1999; Flowerdew 1999; Gavioli 1997; Higgins 1991a, 1991b; Johns 1986, 1988, 1991, 1993; Johns and King 1991; Leech and Candlin 1986, etc.), mainly as a result of the pioneering work of Tim Johns at Birmingham University (1986, 1988).

Johns (1988) states that the use of concordancing in language learning: (a) interjects authenticity (of text, purpose, and activity) into the learning process; (b) learners assume control of that process; and (c) the predominant metaphor for learning becomes the research metaphor, as embodied in the concept of data-driven learning (DDL), which builds learners' competence by giving them access to the facts of linguistic performance.

Higgins (1988) proposes *concordances* as the central idea to shift the pedagogical teaching/learning paradigm from computer as magister to computer as pedagogue. That is, from mere process-control model of language instruction to an information-resource model, where learners explore, hypothesize and learn the language for themselves and the role of instruction is to provide tools (concordance programs) and resources (texts or corpora) for doing so. Similarly, Cobb (1997) considers that DDL has a specific learning effect that can be attributed to the use of concordance software by language learners. He concludes that computer concordances might simulate and potentially rationalize off-line vocabulary acquisition by presenting new words in several contexts.

Stevens (1995) accounts that many teachers feel that concordancers are the type of software that most closely approaches fulfilling the potential of computers in language learning. In a sense, they are working approximations of expert systems. They bring cognitive and analytic skills in students to bear on the manipulation of comprehensive databases for the purpose of solving real-language problems.

The effectiveness of concordances becomes also apparent not just in teaching/learning, but also in linguistic research. By means of this technique, Kettemann (1995) compares the treatment of the English conditional clause in a standard grammar used in Austria (Kacowsky 1987) with the evidence of authentic usage (corpora), and his comparison showed that an important type of English conditional with present tense in both main clause and conditional clause, accounting for one third of all instances in the data, is ignored in Kacowsky's grammar.

Tribble (1997) stresses the potential and usefulness of DDL to language learning/teaching even with few corpus resources or small, specific corpora. Corpora and corpus-based exercises are useful because they favour learning by discovery —grammar, vocabulary, etc.— (Tribble and Johns 1990:12).

A further related issue with DDL is authenticity. Widdowson (1983:30) considers that

> An authentic stimulus in the form of attested instances of language does not guarantee an authentic response in the form of appropriate language activity [...] we should retain the term 'authenticity' to refer to activity (i.e. process) and use the term 'genuine' to refer to attested instances of language.

In this sense a corpus may contain millions of "attested instances of language", but there is nothing to guarantee that you can use data from that corpus as a stimulus for "appropriate language activity" (Tribble 1997). That is, it is likely that foreign language students are not necessarily motivated by a language learning activity if the instances of language use that they are studying are extracted from contexts that have little or no connection with their interests and concerns. Genuine examples of language in use will not necessarily lead to authentic language use or effective language learning activities.

So the question is: which is the best corpus for language learners? Flowerdew (1993:309) thinks that

> Many native speakers make use of others' writing or speech to model their own work in their native language where the genre is unfamiliar. It is time that this skill was brought out of the closet, and exploited as an aid for learning.

Similarly, Bazerman (1994:131) considers that the most useful corpus for learners of English is the one which offers a collection of expert performances in genres which have relevance to the needs and interests of the learners. These texts might exemplify the results and models of the desired forms of language behaviour that language learners want to achieve and might, therefore, be motivating starting points for language learning and language using activities.

Clearly, this, somehow, relegates standard, balanced and representative corpora, such as the Brown corpus of American English (Kučera and Francis 1967), the Lancaster-Oslo-Bergen (LOB) corpus of British texts (Johansson 1980), or other major corpora such as the British National Corpus (BNC) (Burnard 1995), a 100 million word representative corpus of contemporary British written and spoken texts, or the Bank of English at Birmingham University (Sinclair 1991), for language learning purposes. Tribble (1997) points towards non-standard corpora for DDL and draws his attention to multimedia encyclopaedia, such as Microsoft Encarta®, among others. The latest version of Microsoft Encarta® contains more than 30,000 articles, between 200 and 5000 words, which count for a total of roughly 30 million words, covering different domains and topics, such as art, geography, history, language, life science, literature, philosophy, physical science, religion, social science, sports, etc. The data provided by this multimedia encyclopaedia virtually contain enough texts which most students in most language classes will find interesting and informative. In addition, with this comprehensive range of topics and texts, it is not difficult to select *ad hoc* texts, focussing on students particular needs and motivations.

Of course, our aim here is not to advertise any particular multimedia encyclopaedia but much more to encourage language students and teachers to use the vast range of language texts, corpora or data, in general, which is available in electronic form, in CD-ROMs and/or Internet, rather than urging them to construct their our comprehensive and representative corpora.

II. A WORD ON EXISTING DDL-SOFTWARE

In this section, we shall review the main software applications used among DDL practitioners: (1) commercially available concordance programs and (2) Tim Johns' *Context*. In addition, we shall also present a Spanish vocabulary learning multimedia application, *Practica tu Vocabulario* (Sánchez and Cantos 2000), which is based on the electronic dictionary metaphor and DDL-like learning/acquisition strategies.

II.1. Concondancers

Concordancers are text processing tools for looking at how words behave in texts. These tools allow you to find out how words are used in texts. Among the facilities, all concordancers allow you at least[1]:

- To list all the words or word-clusters in a text, set out in alphabetical or frequency order.
- To see any word or phrase in context (concordances), so that you can see what sort of company it keeps.

This text processing tool is generally used for lexicographic work, for preparing dictionaries, and by researchers investigating language patterns.

Tim Johns has compiled numerous exercise examples on his web page[2] using standard concordancing tools. The classroom materials that follow are extracts from his website and are a collection some participants' work of the *Ustí nad Labem DDL Workshop* (21st - 25th March 2000):

About and On

How do we use the prepositions ABOUT and ON? Which one is used more often? Which one tends to be used in academic texts? In which cases is there the occurence of only one of them?

Book

```
 1  to be sent a British Medical Association book about a potential risk to human health - pe
 2 eral market. 'We published a coffee-table book about ant behaviour called The Ants, which
 3    unds sterling 16.95    Publicised as a book about the terrible fate awaiting humanity f
 4  in life. This is yet another 'gee-whizz' book about forensic science, this time based on
 5 title intrigued me: at last, I thought, a book about the personal relationships that scien
                                           .
                                           .
                                           .
21 een evergreen. I remember buying my first book on planets (by Patrick Moore) back in the 1
22        ds. How things have changed. A good book on the planets has always needed to be up-
23 fghanistan, so how did he come to write a book on Murdock? Was his choice dictated by the
24 aos - I'm keeping that for myself. It's a book on kilims - geometrically-patterned rugs fr
25 r (HarperCollins, 1990), and is writing a book on the future of US national security polic
```

(by Kvita Rychtárová)

'Great', 'Big', 'Large', 'Huge' and their Collocations

Task 1 - 'Great' and its collocations

Try to spot what the typical cases of 'great' and its collocations are on the basis of the following examples.

```
1.
      Whether recent discoveries in the Great Pyramid of Cheops have anything to do
  icated to restoring Al-Andalus and its Great Mosque to their former faith
    king themselves comfortable. And the great London clubs, with their roaring coal fires

2.
       narratives of Les Miserables and Great Expectations. What could be more comical
       she agreed to make a film in the Great Journey series, the theme of which was
```

Task 2 - 'Great' and missing nouns

Try to predict the words which are missing.

```
1. Falstaff who has been lured into Windsor Great ________ with antlers on his head
2. Benazzi is one of Europe's great ________, like Rodber an all-round
3. what had become known as Great ________ The Times, the Daily Mail and
4. In 1670 Frederick II the Great, ________ of Prussia
5. the world was dominated by the great European ________ and, since the 1850s,

(Park, players, Race, King, Empires)
```

(by Sarka Canova and Jarka Ivanova)

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Adjectives ending in -ic, -ical

I. Look carefully at the following citations. What difference in the meaning of the adjectives classic/classical can you spot?

```
And when Sinatra was making his classic albums for Capitol in the 1950s Songs For Swinging ...
Gramophone, the classical music magazine, has not written about her single or her album.
```

II. Now fill in the blanks with appropriate adjectives.

```
1. I remember listening to all the ____________ Motown music and the Philadelphia soul stuff.
2. Once it became clear that she could not continue through the next two acts, Deane decided
to replace both dancers, as in ____________ ballet one partner may not be physically suited
to perform with a stand-in.
3. ... we always dine at Cafe Des Arts. A ____________ bistro, run by a consortium of charming
ladies, stylish, innovative food.
4. The area where the dirt collects is transparent, all our detritus is paraded on the outside,
turning the ____________ design inside out. Why do we need to see it?
5. ... architect Richard Norman Shaw, capable of turning out gothic, Queen Anne and strict
____________ designs, made a valuable contribution to the Arts and Crafts movement.
```

(by Zuzana Šaffková and Vladislav Smolka)

II.2. Ready-made DDL-software: *Context*

Probably one of the best known and most used DDL-software is *Context*[1]. This program encourages language learner to investigate how words are used in context in English, and is designed to supplement classes. It is based on short contexts (extracted from the database by means of the computer program *MicroConcord*) illustrating the use of important key items from a database of over 3 million words of text in English.

The program starts offering the user a list of headings: *Top Menu* (parts-of-speech and topics; see *Figure 1*). In addition, it is also possible to view a more detailed index of all the keywords available to the program, together with the names of the files in which each key word is stored and to select a file of contexts (by keywords defined by parts-of-speech, keywords defined by topic or morphemes —prefixes or suffixes; *Figure 2*). Once the user has selected the file of context, the program displays the list of key items in the bottom of the screen (among other facilities) in order to investigate the set of contexts for any particular key item (*Figure 3*). The *Quiz Screen* challenges students to guess what the missing keyword is (*Figures 4* and *5*). After students have finished the Quiz, they can see an analysis of their performance.

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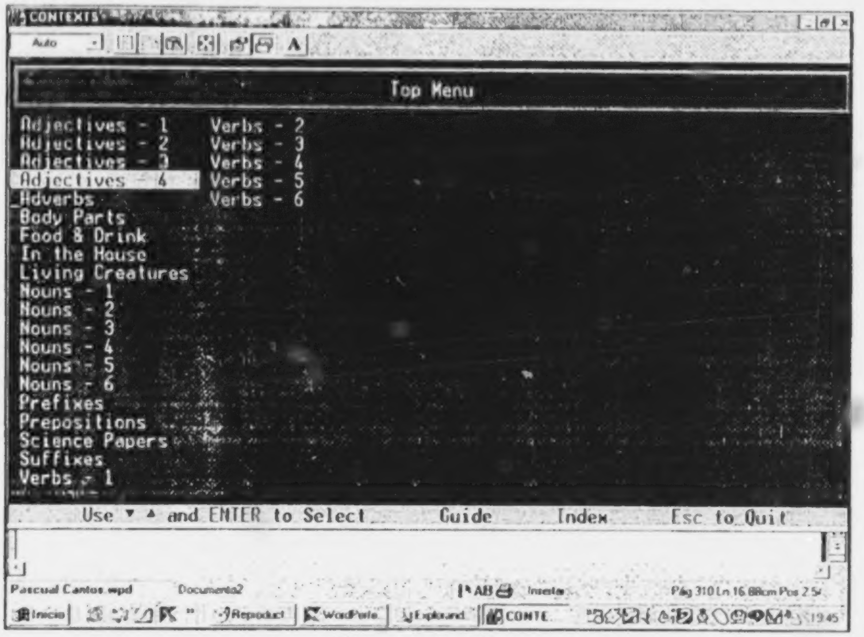
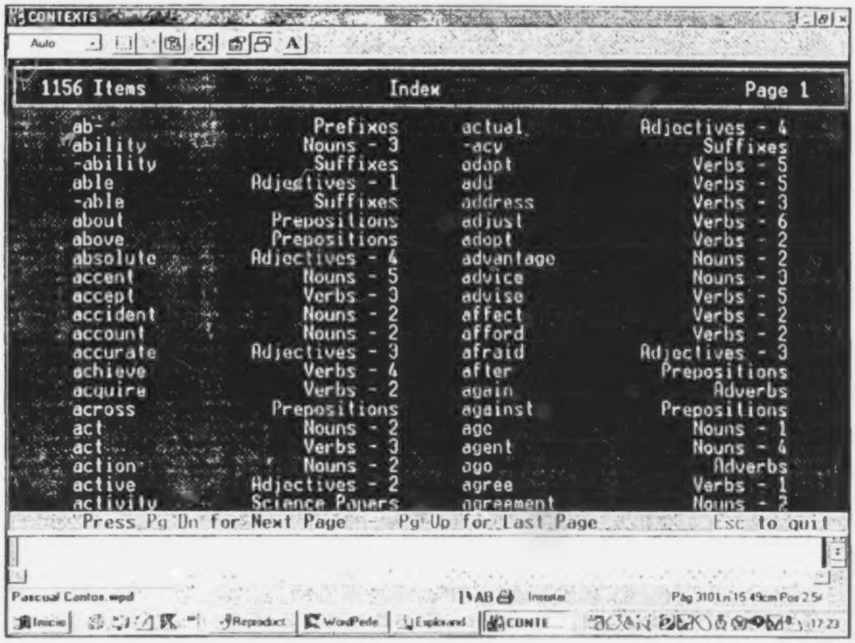


```
                              Top Menu

Adjectives - 1      Verbs - 2
Adjectives - 2      Verbs - 3
Adjectives - 3      Verbs - 4
Adjectives - 4      Verbs - 5
Adverbs             Verbs - 6
Body Parts
Food & Drink
In the House
Living Creatures
Nouns - 1
Nouns - 2
Nouns - 3
Nouns - 4
Nouns - 5
Nouns - 6
Prefixes
Prepositions
Science Papers
Suffixes
Verbs - 1
    Use ▼ ▲ and ENTER to Select     Guide     Index     Esc to Quit
```

Figure 1. Top Menu



```
 1156 Items                   Index                          Page 1

   ab-                 Prefixes       actual        Adjectives - 4
   ability            Nouns - 3       -acy                Suffixes
   -ability            Suffixes       adapt              Verbs - 5
   able          Adjectives - 1       add                Verbs - 5
   -able               Suffixes       address            Verbs - 3
   about           Prepositions       adjust             Verbs - 6
   above           Prepositions       adopt              Verbs - 2
   absolute      Adjectives - 4       advantage          Nouns - 2
   accent             Nouns - 5       advice             Nouns - 3
   accept             Verbs - 3       advise             Verbs - 5
   accident           Nouns - 2       affect             Verbs - 2
   account            Nouns - 2       afford             Verbs - 2
   accurate      Adjectives - 3       afraid        Adjectives - 3
   achieve            Verbs - 4       after           Prepositions
   acquire            Verbs - 2       again                Adverbs
   across          Prepositions       against         Prepositions
   act                Nouns - 2       age                Nouns - 1
   act                Verbs - 3       agent              Nouns - 4
   action             Nouns - 2       ago                  Adverbs
   active        Adjectives - 2       agree              Verbs - 1
   activity      Science Papers       agreement          Nouns - 2
   Press Pg Dn for Next Page  -  Pg Up for Last Page        Esc to quit
```

Figure 2. Indexed-data Window

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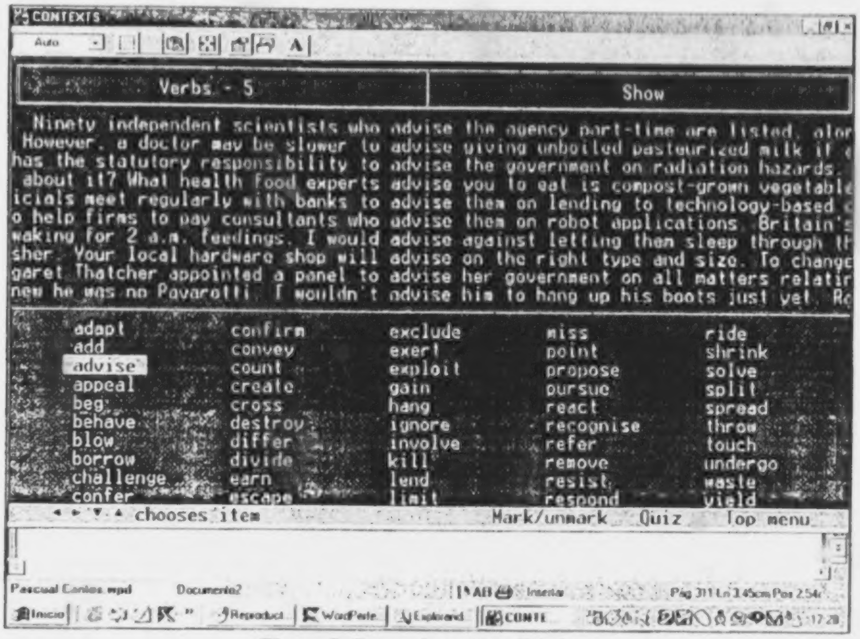
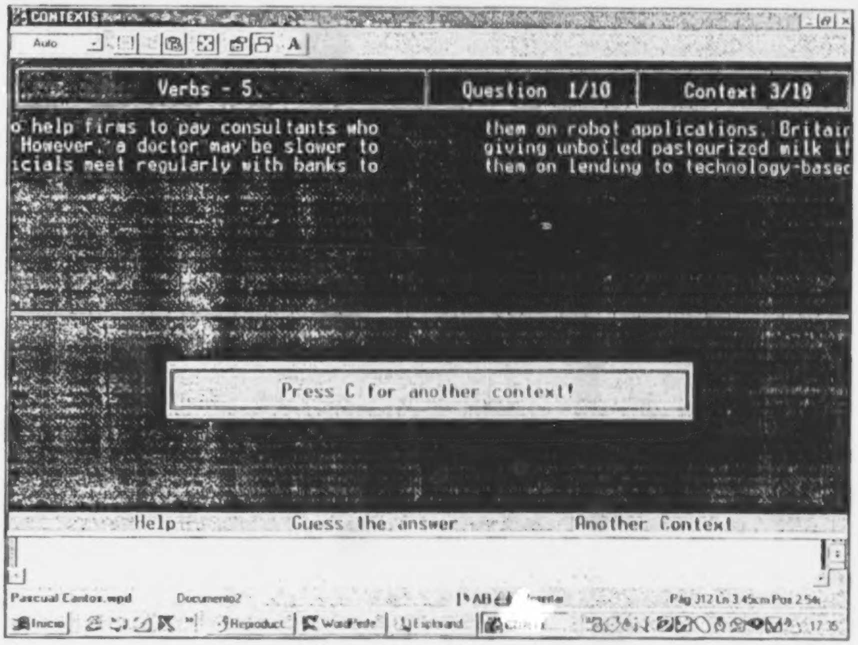

CONTEXTS
Auto
A
Verbs - 5
Show
◄ ► ▼ ▲ chooses item
Mark/unmark
Quiz
Top menu
Pascual Cantos.wpd
Documento2
Insertar
Pág 311 Ln 3.45cm Pos 2.54
Inicio
Reproduct
WordPerfe
Explorand
CONTE
17:20

```
 Ninety independent scientists who advise the agency part-time are listed, alor
 However, a doctor may be slower to advise giving unboiled pasteurized milk if
has the statutory responsibility to advise the government on radiation hazards.
 about it? What health food experts advise you to eat is compost-grown vegetable
icials meet regularly with banks to advise them on lending to technology-based
o help firms to pay consultants who advise them on robot applications. Britain's
waking for 2 a.m. feedings. I would advise against letting them sleep through th
sher. Your local hardware shop will advise on the right type and size. To change
garet Thatcher appointed a panel to advise her government on all matters relatir
new he was no Pavarotti. I wouldn't advise him to hang up his boots just yet. R
```

```
 adapt       confirm     exclude     miss        ride
 add         convey      exert       point       shrink
 advise      count       exploit     propose     solve
 appeal      create      gain        pursue      split
 beg         cross       hang        react       spread
 behave      destroy     ignore      recognise   throw
 blow        differ      involve     refer       touch
 borrow      divide      kill        remove      undergo
 challenge   earn        lend        resist      waste
 confer      escape      limit       respond     yield
```

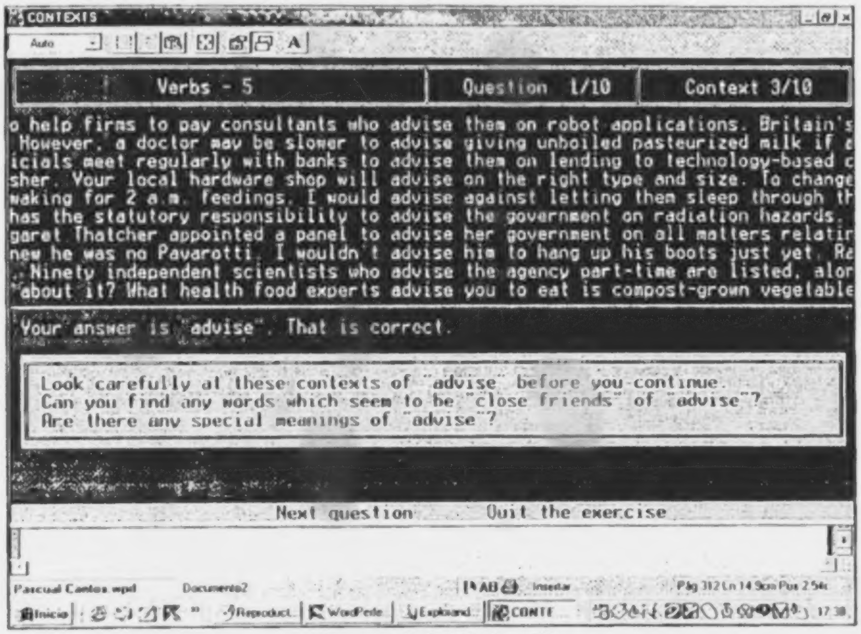
Figure 3. Concordance-data Window


CONTEXTS
Auto
A
Verbs - 5
Question 1/10
Context 3/10
Help
Guess the answer
Another Context
Pascual Cantos.wpd
Documento2
Insertar
Pág 312 Ln 3.45cm Pos 2.54
Inicio
Reproduct
WordPerfe
Explorand
17:35

```
o help firms to pay consultants who          them on robot applications. Britair
 However, a doctor may be slower to          giving unboiled pasteurized milk if
icials meet regularly with banks to          them on lending to technology-basec
```

```
Press C for another context!
```

Figure 4. Quiz Window (1)



```
Verbs - 5                    Question 1/10      Context 3/10
o help firms to pay consultants who advise them on robot applications. Britain's
 However, a doctor may be slower to advise giving unboiled pasteurized milk if a
icials meet regularly with banks to advise them on lending to technology-based c
sher. Your local hardware shop will advise on the right type and size. To change
waking for 2 a.m. feedings. I would advise against letting them sleep through th
has the statutory responsibility to advise the government on radiation hazards.
garet Thatcher appointed a panel to advise her government on all matters relatin
new he was no Pavarotti. I wouldn't advise him to hang up his boots just yet. Ra
. Ninety independent scientists who advise the agency part-time are listed, alon
"about it? What health food experts advise you to eat is compost-grown vegetable
Your answer is "advise". That is correct.

Look carefully at these contexts of "advise" before you continue.
Can you find any words which seem to be "close friends" of "advise"?
Are there any special meanings of "advise"?
```

Figure 5. Quiz Window (2)

II.3. Using Electronic Dictionary Facilities for DDL

Succinctly, electronic dictionaries are commercial derived products of standard paper dictionaries. The main differences between paper and electronic dictionaries is that in the latter you can find words immediately, even if you are unsure of the exact spelling. They can also be run as a stand-alone program and can be used in conjunction with most word-processing software; you can browse through entries, view adjacent entries, or travel swiftly between entries. In addition, some electronic dictionaries keep track of your searches so that you can very easily return to words you have previously looked up. You can also print extracts or definitions and copy them to the clipboard. Electronic dictionaries can be monolingual, bilingual or multilingual (*Figures 6* and *7*).

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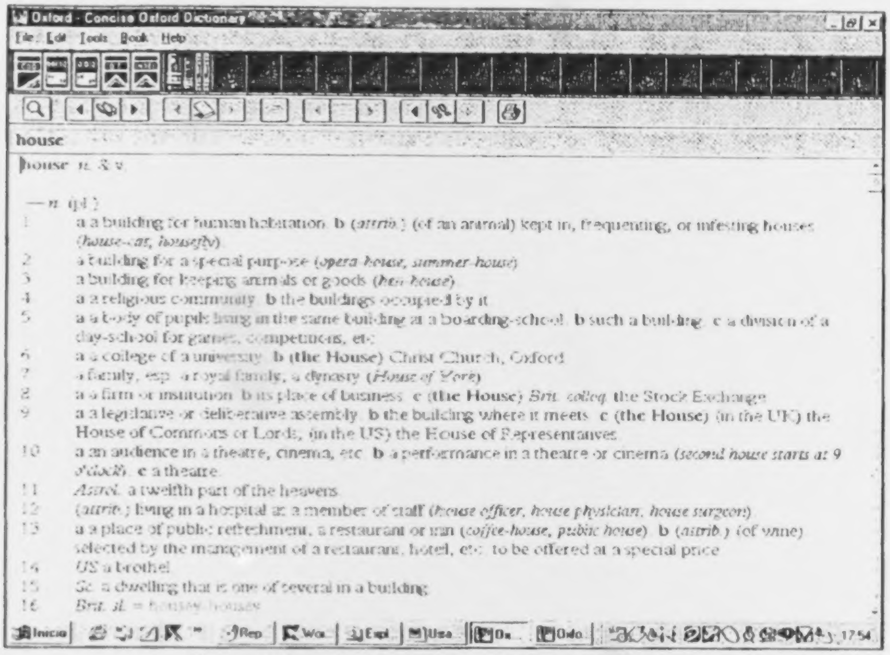

Oxford - Concise Oxford Dictionary
File Edit Tools Book Help
Inicio
Rep
Wo
Expl
Usa
Ox
Oxfo
17:54

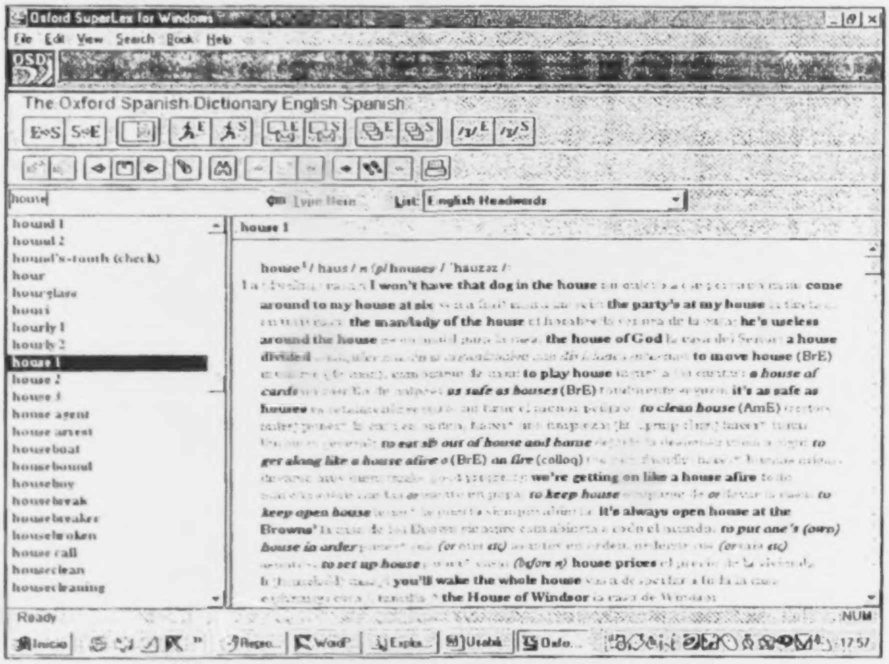
house

house *n.* & v.

—*n.* (*pl.*)

1 **a** a building for human habitation. **b** (*attrib.*) (of an animal) kept in, frequenting, or infesting houses (*house-cat, housefly*).
2 a building for a special purpose (*opera-house, summer-house*).
3 a building for keeping animals or goods (*hen-house*).
4 **a** a religious community. **b** the buildings occupied by it.
5 **a** a body of pupils living in the same building at a boarding-school. **b** such a building. **c** a division of a day-school for games, competitions, etc.
6 **a** a college of a university. **b** (**the House**) Christ Church, Oxford.
7 a family, esp. a royal family, a dynasty (*House of York*).
8 **a** a firm or institution. **b** its place of business. **c** (**the House**) *Brit. colloq.* the Stock Exchange.
9 **a** a legislative or deliberative assembly. **b** the building where it meets. **c** (**the House**) (in the UK) the House of Commons or Lords; (in the US) the House of Representatives.
10 **a** an audience in a theatre, cinema, etc. **b** a performance in a theatre or cinema (*second house starts at 9 o'clock*). **c** a theatre.
11 *Astrol.* a twelfth part of the heavens.
12 (*attrib.*) living in a hospital as a member of staff (*house officer, house physician, house surgeon*).
13 **a** a place of public refreshment, a restaurant or inn (*coffee-house, public house*). **b** (*attrib.*) (of wine) selected by the management of a restaurant, hotel, etc. to be offered at a special price.
14 *US* a brothel.
15 *Sc.* a dwelling that is one of several in a building.
16 *Brit. sl.* = [illegible]

Figure 6. Example of a monolingual electronic dictionary


Oxford SuperLex for Windows
File Edit View Search Book Help
OSD
The Oxford Spanish Dictionary English Spanish
E»S S»E
Type Here
List: English Headwords
Ready
NUM
Inicio
Repo
Word
Explo
Usabi
Oxfo
17:57

house

hound 1
hound 2
hound's-tooth (check)
hour
hourglass
houri
hourly 1
hourly 2
house 1
house 2
house 3
house agent
house arrest
houseboat
housebound
houseboy
housebreak
housebreaker
housebroken
house call
houseclean
housecleaning

house 1

house¹ / haus / *n* (*pl* houses / ˈhauzəz /)

Figure 7. Example of a bilingual dictionary

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Based on the electronic dictionary metaphor, Sánchez and Cantos[4] designed a DDL-like software: *Practica tu Vocabulario* (*PTV*). *PTV* is a Spanish lexicon learning software, containing the 4500 most frequent types occurring in the *CUMBRE Corpus* —a linguistic corpus of contemporary Spanish (Sánchez et al. 1995). All 4500 items:

- Are translated into English, French, German, Portuguese and Italian. By just clicking on the desired flag, students will get the words translated in that language. However, students might change translation language any time at will (*Figure 8*).
- Can be accessed, using standard electronic search facilities: term search, window scroll or thumb index (*Figure 9*).
- Are illustrated with a real example —full concordance sentence, extracted from the *CUMBRE Corpus* (*Figure 10*).
- Are recorded and can be heard by the students.

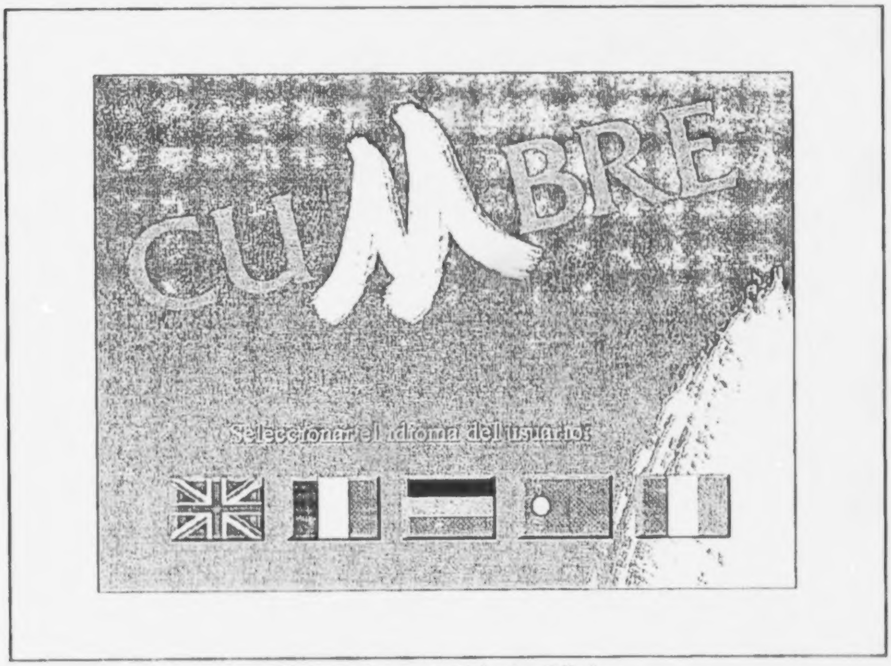

Figure 8. Language Selection Window

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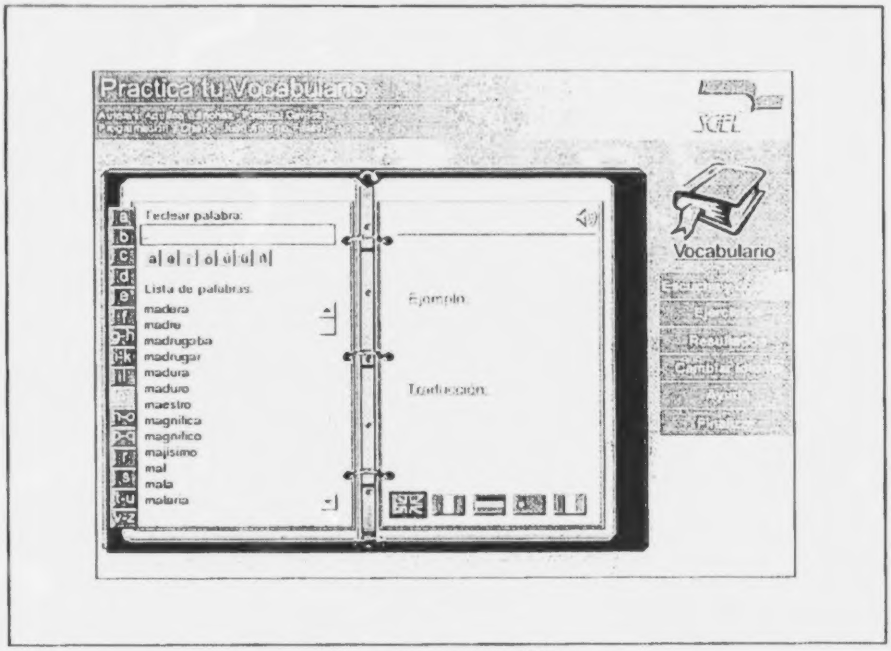
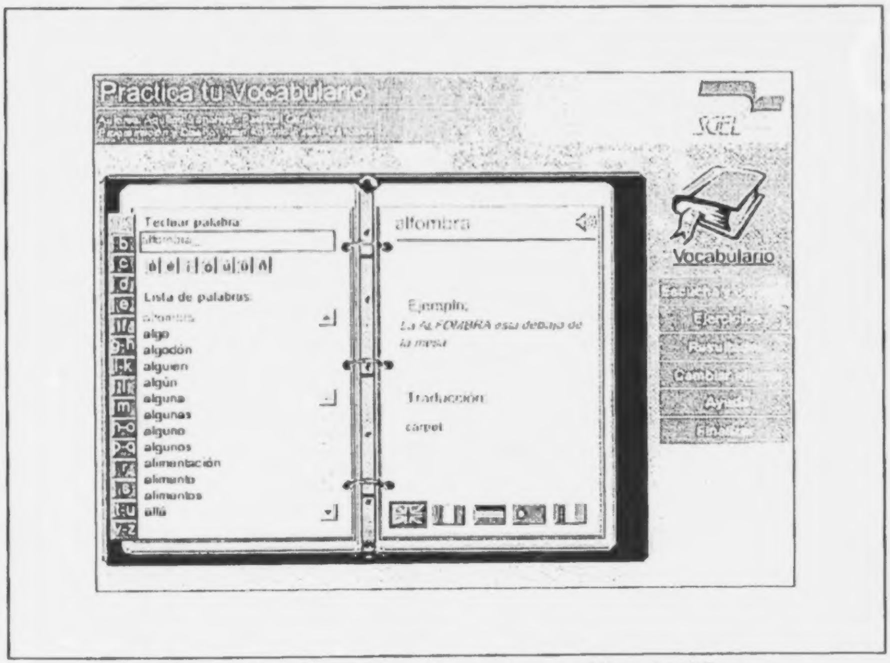

Practica tu Vocabulario
SGEL
Teclear palabra:
a| é| í| ó| ú| ü| ñ|
Lista de palabras:
madera
madre
madrugaba
madrugar
madura
maduro
maestro
magnífica
magnífico
majísimo
mal
mala
malaria
Ejemplo:
Traducción:
Vocabulario

Figure 9. Search Facilities


Practica tu Vocabulario
SGEL
Teclear palabra:
alfombra
á| é| í| ó| ú| ü| ñ|
Lista de palabras:
alfombra
algo
algodón
alguien
algún
alguna
algunas
alguno
algunos
alimentación
alimento
alimentos
allá
alfombra
Vocabulario

Ejemplo:
La ALFOMBRA esta debajo de la mesa

Traducción:
carpet

Figure 10. Visualising Concordance-sentence and Translated Term

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The option *Ejercicios* offers three types of exercises:

- *Listen, repeat, record and check your pronunciation.* On selecting this exercise, students will choose the number of words they wish to work with by clicking on the button with the number of examples which will, at random, be the basis of the exercise. Next, the random-selected words will appear, and by clicking on the loudspeaker icon, the blue-highlighted word can be heard. Finally, students click on the microphone icon and record the highlighted word. A click on the right loudspeaker reproduces the *model* recording followed by the student's recording and the student can contrast both outputs (*Figure 11*).
- *Listen and write.* This is a word dictation practice; students will hear randomly chosen words and will have to write them correctly. The program allows three guesses before displaying the correct spelling. To facilitate the writing of Spanish diacritics, *PTV* provides them on a small table below the text-entry window (*Figure 12*).
- *Read in your language and translate into Spanish.* Here the program displays randomly selected words in the target language chosen and students have to write the translation for each word into Spanish (*Figure 13*).

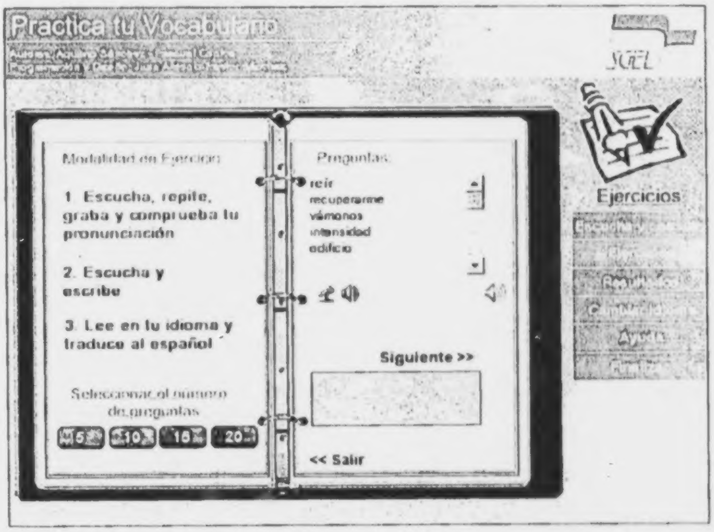
Practica tu Vocabulario
SGEL
Modalidad en Ejercicio
1. Escucha, repite, graba y comprueba tu pronunciación
2. Escucha y escribe
3. Lee en tu idioma y traduce al español
Seleccionar el número de preguntas
5
10
15
20
Preguntas
reír
recuperarme
vámonos
intensidad
edificio
Siguiente >>
<< Salir
Ejercicios
Resultados
Ayuda

Figure 11. Exercise Type 1: *Listen, Repeat, Record and Check your Pronunciation*

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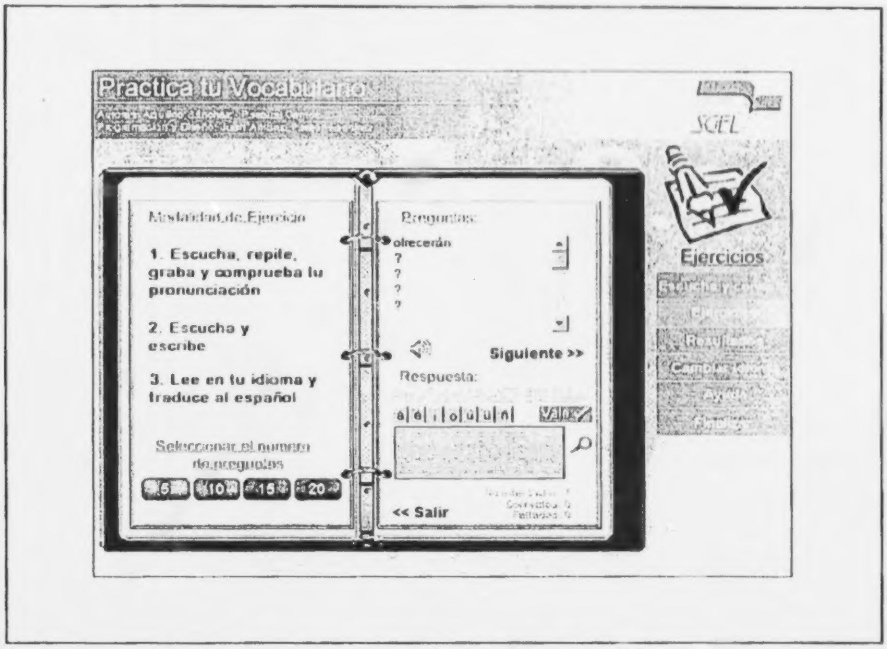

Practica tu Vocabulario
SGEL
Ejercicios
Siguiente >>
á é í ó ú ü ñ
Valida
5
10
15
20
<< Salir

Modalidad de Ejercicio

1. Escucha, repite, graba y comprueba tu pronunciación

2. Escucha y escribe

3. Lee en tu idioma y traduce al español

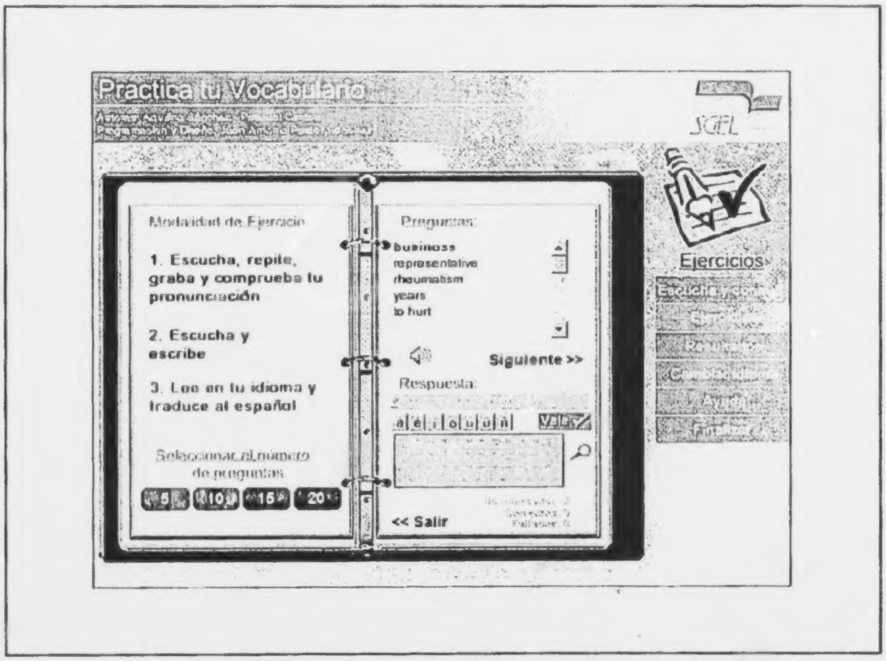
Seleccionar el número de preguntas

Preguntas:

ofrecerán
?
?
?
?

Respuesta:

Figure 12. Exercise Type 2: *Listen and Write*


Practica tu Vocabulario
SGEL
Ejercicios
Siguiente >>
á é í ó ú ü ñ
Valida
5
10
15
20
<< Salir

Modalidad de Ejercicio

1. Escucha, repite, graba y comprueba tu pronunciación

2. Escucha y escribe

3. Lee en tu idioma y traduce al español

Seleccionar el número de preguntas

Preguntas:

business
representative
rheumatism
years
to hurt

Respuesta:

Figure 13. Exercise Type 3: *Read in your Language and Translate into Spanish*

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On completion of each exercise or at the end of a working session, students may consult his/her hits or failures by clicking on the *Resultados* tab on the right of the agenda.

III. INTEGRATING DDL AND *LANGUAGE TECHNOLOGIES*

In recent years, a new term has been coined by the CALL community: *Human Language Technologies* (HLT). This term embraces a wide range of research and development areas within the area of Language Engineering or Language Technologies.

> The field of human language technology covers a broad range of activities with the eventual goal of enabling people to communicate with machines using natural communication skills. Research and development activities include the coding, recognition, interpretation, translation, and generation of language. ... Advances in human language technology offer the promise of nearly universal access to on-line information and services. Since almost everyone speaks and understands a language, the development of spoken language systems will allow the average person to interact with computers without special skills or training, using common devices such as the telephone. These systems will combine spoken language understanding and generation to allow people to interact with computers using speech to obtain information on virtually any topic, to conduct business and to communicate with each other more effectively. (Cole 1996)

III.1. Some HLT tools[5]

There are many HLT tools that have become commercial systems. Among those systems, probably the two areas that have focused most commercial and scientific motivation are Machine Translation (MT) and Speech Recognition (SR). Particularly interesting here is the possible application domain of MT and SR to CALL and more generally, language teaching and learning, and other HLT tools. Interesting in this respect are part-of-speech (POS) taggers and syntactic parsers. These two Natural Language Processing (NLP) tools might help teachers and learners to preprocess texts and highlight certain grammatical phenomena or patterns without the trouble of having to manually annotate a text.

In the following sections, we shall introduce some HLT applications and try to highlight their interest for language teachers and learners, in general, and also for non-HLT initiated CALL practitioners.

III.1.1. Machine Translation[6]

From the earliest days, MT has been bedevilled by grandiose claims and exaggerated expectations. In present day, however, the term MT is generally the standard for computerised systems responsible for the production of translations from one natural language into another, with or without human assistance.

Although the ideal may be to produce high-quality translations, in practice the output of most MT systems is revised and edited. In this respect, MT output does not differ much from the output of most human translators which is normally revised by other translators before dissemination. MT output may also serve as rough or raw translations.

While many of the commercially available MT packages may be useful for extracting the gist of a text they should not be seen as a serious replacement for the human translator. Most machine translations are not that bad, they are half-intelligible, letting you know whether a text is worth having translated properly and there are many situations where the ability of MT systems to produce reliable, if less than perfect, translations at high speed are valuable. Even where the quality is lower, it is often easier and cheaper to revise 'draft quality' MT output than translate it entirely by hand. The translation quality of MT systems depends mainly on restrictions of the translation domain, linguistic architecture and components.

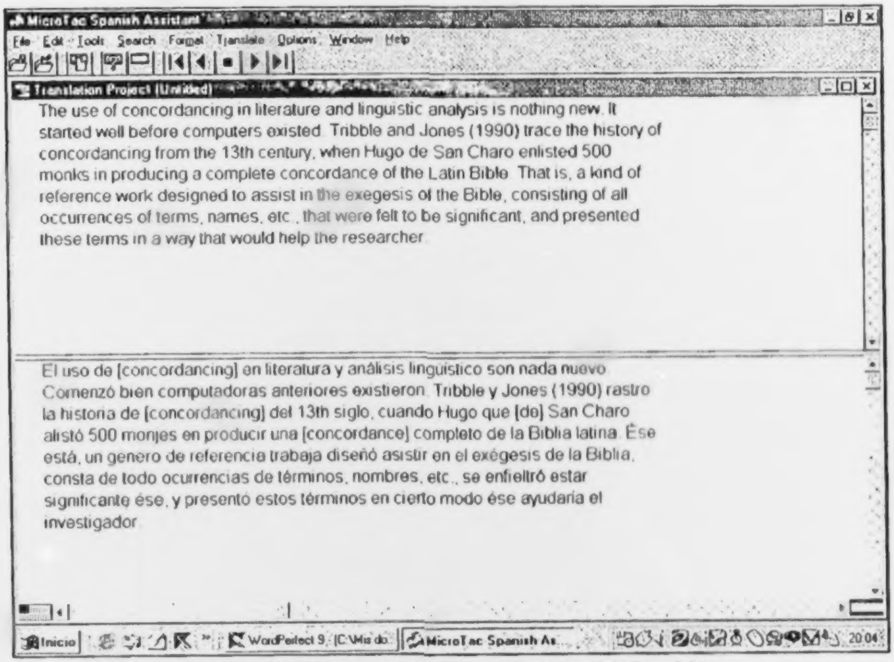
Imposing restrictions on the input such as (a) limiting the texts to particular sublanguages of document type and subject field and/or (b) controlling the language (reducing ambiguities, colloquial expressions, etc.), may improve translation quality.

Regarding MT architecture, the first MT systems are generally referred to as having a direct translation approach. The main idea behind this architecture is that source language sentences can be transformed into target language sentences by shallow analysing the source text, replacing source words with their target language equivalents as specified in a bilingual dictionary, and then roughly re-arranging their order to suit the rules of the target language. The second basic type is the interlingua approach. This type assumes the possibility of converting texts to and from *meaning* representations common to more than one language. Translations consist of two stages or phases: (1) from the source language to the interlingua and (2) from the interlingua to the target language. The third type of MT systems, the transfer approach, involves three stages: (1) converting source texts into intermediate representations in which ambiguities have been resolved irrespectively of any other language, (2) converting these into equivalent representations of the target language, and (3) generating the target texts (translations).

Some other MT systems rely less on the approaches mentioned above. Example-based machine translation, for instance, does not employ mapping between languages but instead matches stored translation examples against each other using a bilingual corpus of translation pairs (Nagao 1984). An even more radical approach to MT is the statistical approach (Brown et al. 1993) which requires the use of large bilingual corpora which serve as input for a statistical translation model.

Regarding language teaching, MT systems can be easily and efficiently integrated into the learning process. Some potential applications are[7]:

- Translating full texts or paragraphs. Student can translate and then read the texts in their own language, extracting the gist without teacher intervention (*Figure 14*). In most MT systems, users can translate sentences automatically or interactively. Automatic translation proceeds autonomously, without the intervention of the user, whereas in interactive translation, the user can intervene in the translation process and choose the best word whenever more than one translation is possible.
- Translating sentence-by-sentence and print the source and target texts in a line-by-line format. This layout can be useful for comparing the original and translated text. This allows students to explore for equivalents between the source and target language, look to erroneous translations/false friends and assist in their own translations. (*Table 1*).
- Studying or writing in a foreign language.
- Looking up words (dictionary) and their inflections (Spanish grammar) (*Figure 15*).


MicroTac Spanish Assistant
File Edit Tools Search Format Translate Options Window Help
Translation Project (Untitled)
Inicio
WordPerfect 9 [C:\Mis do
MicroTac Spanish As
20:04

The use of concordancing in literature and linguistic analysis is nothing new. It
started well before computers existed. Tribble and Jones (1990) trace the history of
concordancing from the 13th century, when Hugo de San Charo enlisted 500
monks in producing a complete concordance of the Latin Bible. That is, a kind of
reference work designed to assist in the exegesis of the Bible, consisting of all
occurrences of terms, names, etc., that were felt to be significant, and presented
these terms in a way that would help the researcher.

El uso de [concordancing] en literatura y análisis linguistico son nada nuevo.
Comenzó bien computadoras anteriores existieron. Tribble y Jones (1990) rastro
la historia de [concordancing] del 13th siglo, cuando Hugo que [de] San Charo
alistó 500 monjes en producir una [concordance] completo de la Biblia latina. Ése
está, un genero de referencia trabaja diseñó asistir en el exégesis de la Biblia,
consta de todo ocurrencias de términos, nombres, etc., se enfieltró estar
significante ése, y presentó estos términos en cierto modo ése ayudaría el
investigador.

Figure 14. Automatic Text Translation (English-Spanish)

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1. The use of concordancing in literature and linguistic analysis is nothing new.

   El uso de [concordancing] en literatura y análisis lingüístico son nada nuevo.

2. It started well before computers existed.

   Comenzó bien computadoras anteriores existieron.

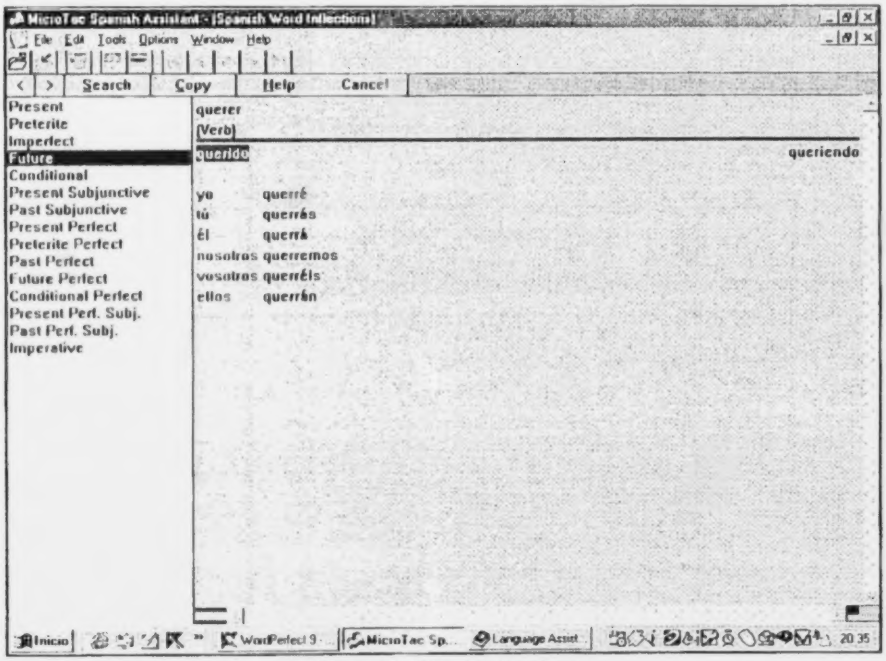
3. Tribble and Jones (1990) trace the history of concordancing from the 13th century, when Hugo de San Charo enlisted 500 monks in producing a complete concordance of the Latin Bible.

   Tribble y Jones (1990) rastro la historia de [concordancing] del 13th siglo, cuando Hugo que [de] San Charo alistó 500 monjes en producir una [concordance] completo de la Biblia latina.

4. That is, a kind of reference work designed to assist in the exegesis of the Bible, consisting of all occurrences of terms, names, etc., that were felt to be significant, and presented these terms in a way that would help the researcher.

   Ése está, un género de referencia trabaja diseñó asistir en el exégesis de la Biblia, consta de todo ocurrencias de términos, nombres, etc., se enfieltró estar significante ése, y presentó estos términos en cierto modo ése ayudaría el investigador.

Table 1. Line-by-line Printed Translation


MicroTac Spanish Assistant - [Spanish Word Inflections]
File
Edit
Tools
Options
Window
Help
<
>
Search
Copy
Help
Cancel
Present
Preterite
Imperfect
Future
Conditional
Present Subjunctive
Past Subjunctive
Present Perfect
Preterite Perfect
Past Perfect
Future Perfect
Conditional Perfect
Present Perf. Subj.
Past Perf. Subj.
Imperative
Inicio
WordPerfect 9
MicroTac Sp...
Language Assist
20:35

querer
[Verb]
querido queriendo

yo	querré
tú	querrás
él	querrá
nosotros	querremos
vosotros	querréis
ellos	querrán

Figure 15. Inflection Look-up

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III.1.2. Part-of-Speech Tagging

Word frequency lists derived by computers from corpora have clear shortcomings. These computer counts and sorting of word forms somehow bury or distort important facts about the language: variant inflected forms of nouns and verbs especially would be treated as entirely different word types. For example, *be*, *am*, *are*, *is*, *was* and *were* would be accounted for completely different linguistic items. Similarly, the frequency count of the number of occurrences of the word form *light* in a corpus would include the noun, verb, adjective and adverb.

Because manual annotation of each word token with its parts-of-speech (POS) in the corpus would be too expensive, the solution adopted has been to design computer programs, known as *POS-taggers*, to annotate automatically every word in the corpus with a *tag* to show the POS it belongs in context.

TAGGIT[8] was the first computer program designed and implemented to annotate a major corpus and assigned 87 tags to the word forms in a corpus. Subsequent developments in POS-taggers found necessary to expand the tagset and to modify the rule-based approach of *TAGGIT*.

Other tagging systems, such as *CLAWS*[9], are based on probabilistic principles and are remarkably robust. In particular, *CLAWS* uses 133 basic word and punctuation tags and gets a minor error margin of just 3-4%.

Another extension of automatic POS-tagging is the combination of rules and stochastic or probabilistic principles. This is found in *eTiKeT@*[10]. Actually, this HLT tool is not a tagger but a tagger-generator. It has not been designed for any specific language but, in principle, for any language. It starts from scratch: with an empty lexicon (data base), without any linguistic information (rules) nor probabilistic data and uses just 14 tags (*Table 2*). The user's task is to train or "teach" it for the language desired. All sessions are stored and the manual tagging is compared with the system's performance (*Tables 3a, 3b* and *4*). Once a satisfactory success rate has been achieved, the system can be left to perform automatically without human intervention.

To speed up the initial human tagging phase, the user can alternatively feed the system's lexicon with stoplist items. That is, high-frequent non-ambiguous types, mostly close-class items, such as pronouns, prepositions, conjunctions, articles, auxiliary and modal verbs, etc.

The program tags on a sentence-by-sentence basis and outputs the results either in a database mode (*Figure 16*) or as running ASCII text with the tags attached to the tokens in the text (*Figure 17*). Additionally, the user can also consult the patterns and statistics the system has inferred so far (*Figure 18*).

ID	POS	Abbreviation
0	Noun	N
1	Verb (lexical)	V
2	Verb (aux)	Aux
3	Verb (modal)	Mod
4	Adjective	Adj
5	Adverb	Adv
6	Preposition	Pre
7	Particle	Par
8	Conjunction	Con
9	Interjection	Int
10	Determiner	Det
11	Pronoun	Pro
12	Punctuation	Pun
13	Other	Oth

Table 2. Tag-set of *eTiKeT@*

SessionCode	FileCode	CorrectGuess	WrongGuess	LeftContext	RightContext
2	2	2	2	3	3
3	3	3	1	3	3
4	4	5	0	3	3
5	5	6	1	3	3
6	6	6	1	3	3
7	7	2187	1407	3	3
8	10	63	50	3	3

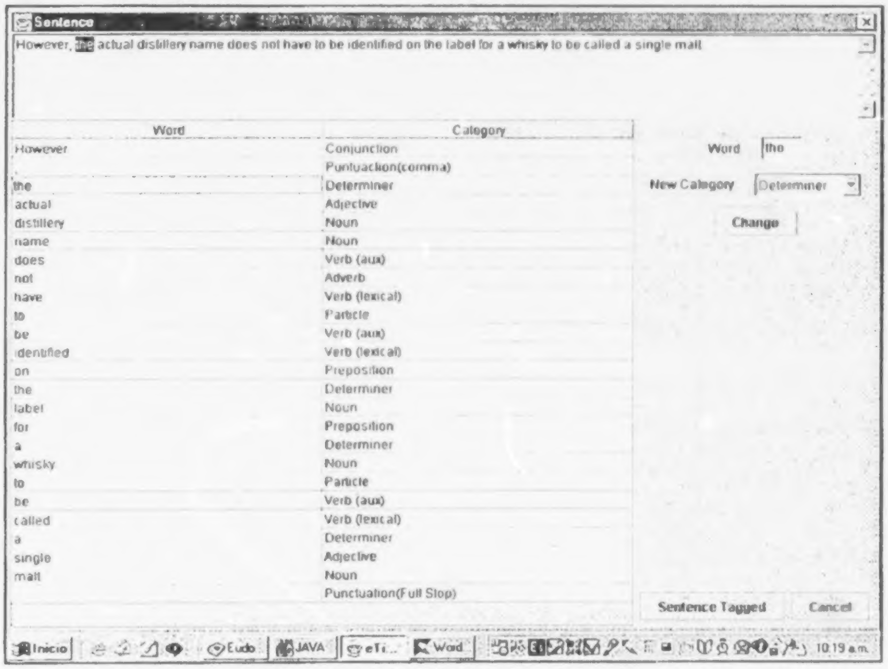
Table 3a. Information on Session Performance and POS-Disambiguation Context selected

TagLastWord	Date	FinishedSession	JustWords	Language
0	2001-04-19 14:51:09.36	YES	NO	0
0	2001-04-19 14:52:35.21	YES	NO	0
0	2001-04-19 14:54:48.02	YES	NO	0
0	2001-04-19 14:57:17.85	YES	NO	0
0	2001-04-19 14:58:53.97	YES	NO	0
2	2001-05-10 15:25:29.61	YES	NO	0
6	2002-04-25 10:20:48.49	YES	NO	0

Table 3b. Information on Tags , Date, Session, Text or Single Word Tagging and Language[11]

Word	POS	Frequency	SessionCode	CorrectGuess	Language
a	10	62	0	YES	0
about	6	17	7	YES	0
above	6	1	0	YES	0
accept	1	1	7	NO	0
acceptable	4	1	7	NO	0
achieve	1	1	7	NO	0
achieved	1	1	7	NO	0
achieves	1	1	7	NO	0
achieving	1	1	7	NO	0
across	6	1	7	YES	0
actual	4	3	7	YES	0
additional	4	2	7	NO	0
address	0	1	7	NO	0
address	1	2	7	NO	0
addressed	1	1	7	NO	0
administration	0	2	7	NO	0
admiral	0	1	7	NO	0
advance	1	2	7	NO	0
affect	1	1	7	NO	0
after	5	1	7	YES	0

Table 4. Data Base Extract (Types, Tag, Frequency, Session, First-Time Guessing of the Type and Language)



However, the actual distillery name does not have to be identified on the label for a whisky to be called a single malt

Word	Category
However	Conjunction
,	Puntuacion(comma)
the	Determiner
actual	Adjective
distillery	Noun
name	Noun
does	Verb (aux)
not	Adverb
have	Verb (lexical)
to	Particle
be	Verb (aux)
identified	Verb (lexical)
on	Preposition
the	Determiner
label	Noun
for	Preposition
a	Determiner
whisky	Noun
to	Particle
be	Verb (aux)
called	Verb (lexical)
a	Determiner
single	Adjective
malt	Noun
	Punctuation(Full Stop)

Word: the

New Category: Determiner

Figure 16. *eTiKeT@* (Data Base Layout)

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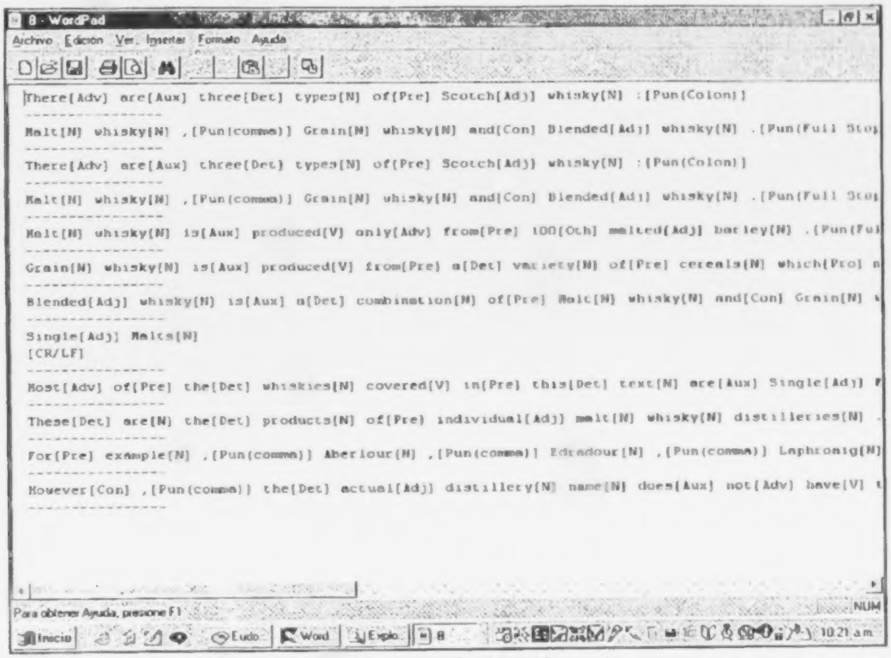
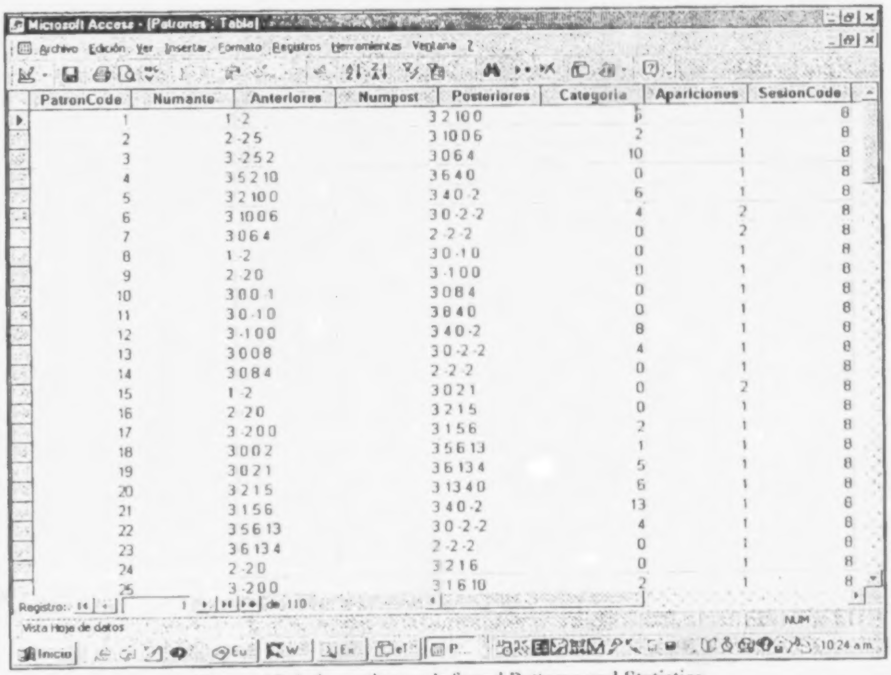

8 - WordPad
Archivo Edición Ver Insertar Formato Ayuda
Para obtener Ayuda, presione F1
NUM
Inicio
Eudo
Word
Explo
8
10:21 a.m.

```
There[Adv] are[Aux] three[Det] types[N] of[Pre] Scotch[Adj] whisky[N] :[Pun(Colon)]
-----------------
Malt[N] whisky[N] ,[Pun(comma)] Grain[N] whisky[N] and[Con] Blended[Adj] whisky[N] .[Pun(Full Sto
-----------------
There[Adv] are[Aux] three[Det] types[N] of[Pre] Scotch[Adj] whisky[N] :[Pun(Colon)]
-----------------
Malt[N] whisky[N] ,[Pun(comma)] Grain[N] whisky[N] and[Con] Blended[Adj] whisky[N] .[Pun(Full Sto
-----------------
Malt[N] whisky[N] is[Aux] produced[V] only[Adv] from[Pre] 100[Oth] malted[Adj] barley[N] .[Pun(Fu
-----------------
Grain[N] whisky[N] is[Aux] produced[V] from[Pre] a[Det] variety[N] of[Pre] cereals[N] which[Pro] n
-----------------
Blended[Adj] whisky[N] is[Aux] a[Det] combination[N] of[Pre] Malt[N] whisky[N] and[Con] Grain[N] w
-----------------
Single[Adj] Malts[N]
[CR/LF]
-----------------
Most[Adv] of[Pre] the[Det] whiskies[N] covered[V] in[Pre] this[Det] text[N] are[Aux] Single[Adj] M
-----------------
These[Det] are[N] the[Det] products[N] of[Pre] individual[Adj] malt[N] whisky[N] distilleries[N] .
-----------------
For[Pre] example[N] ,[Pun(comma)] Aberlour[N] ,[Pun(comma)] Edradour[N] ,[Pun(comma)] Laphroaig[N]
-----------------
However[Con] ,[Pun(comma)] the[Det] actual[Adj] distillery[N] name[N] does[Aux] not[Adv] have[V] t
-----------------
```

Figure 17. *eTiKeT@* (ASCII Layout)


Microsoft Access - [Patrones : Table]
Archivo Edición Ver Insertar Formato Registros Herramientas Ventana ?
Registro: 1 de 110
Vista Hoja de datos
NUM
Inicio
Eu
W
Ex
el
P...
10:24 a.m.

PatronCode	Numante	Anteriores	Numpost	Posteriores	Categoria	Apariciones	SesionCode
1		1 -2		3 2 100	6	1	8
2		2 -2 5		3 10 0 6	2	1	8
3		3 -2 5 2		3 0 6 4	10	1	8
4		3 5 2 10		3 6 4 0	0	1	8
5		3 2 100		3 4 0 -2	6	1	8
6		3 10 0 6		3 0 -2 -2	4	2	8
7		3 0 6 4		2 -2 -2	0	2	8
8		1 -2		3 0 -1 0	0	1	8
9		2 -2 0		3 -1 0 0	0	1	8
10		3 0 0 -1		3 0 8 4	0	1	8
11		3 0 -1 0		3 8 4 0	0	1	8
12		3 -1 0 0		3 4 0 -2	8	1	8
13		3 0 0 8		3 0 -2 -2	4	1	8
14		3 0 8 4		2 -2 -2	0	1	8
15		1 -2		3 0 2 1	0	2	8
16		2 -2 0		3 2 1 5	0	1	8
17		3 -2 0 0		3 1 5 6	2	1	8
18		3 0 0 2		3 5 6 13	1	1	8
19		3 0 2 1		3 6 13 4	5	1	8
20		3 2 1 5		3 13 4 0	6	1	8
21		3 1 5 6		3 4 0 -2	13	1	8
22		3 5 6 13		3 0 -2 -2	4	1	8
23		3 6 13 4		2 -2 -2	0	1	8
24		2 -2 0		3 2 1 6	0	1	8
25		3 -2 0 0		3 1 6 10	2	1	8

Figure 18. Information on Inferred Patterns and Statistics

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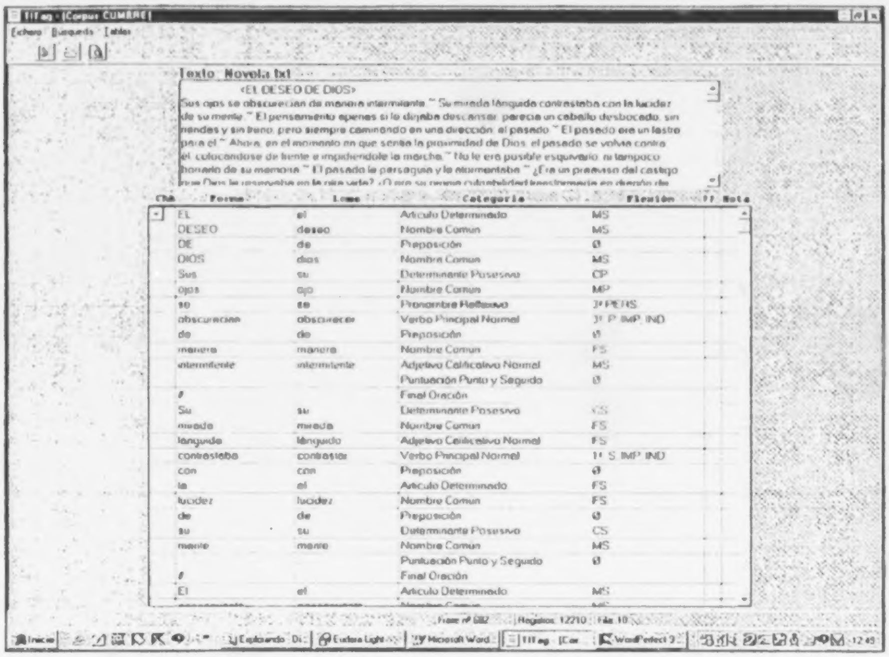

«EL DESEO DE DIOS»

Sus ojos se obscurecían de manera intermitente ~ Su mirada lánguida contrastaba con la lucidez de su mente ~ El pensamiento apenas si lo dejaba descansar parecía un caballo desbocado sin riendas y sin freno, pero siempre caminando en una dirección: el pasado ~ El pasado era un lastre para él ~ Ahora, en el momento en que sentía la proximidad de Dios el pasado se volvía contra él colocándose de frente e impidiéndole la marcha ~ No le era posible esquivarlo ni tampoco borrarlo de su memoria ~ El pasado le perseguía y le atormentaba ~ ¿Era un preaviso del castigo

Forma	Lema	Categoria	Flexión
EL	el	Artículo Determinado	MS
DESEO	deseo	Nombre Común	MS
DE	de	Preposición	Ø
DIOS	dios	Nombre Común	MS
Sus	su	Determinante Posesivo	CP
ojos	ojo	Nombre Común	MP
se	se	Pronombre Reflexivo	3ª PERS
obscurecían	obscurecer	Verbo Principal Normal	3ª P. IMP. IND
de	de	Preposición	Ø
manera	manera	Nombre Común	FS
intermitente	intermitente	Adjetivo Calificativo Normal	MS
		Puntuación Punto y Seguido	Ø
#		Final Oración	
Su	su	Determinante Posesivo	CS
mirada	mirada	Nombre Común	FS
lánguida	lánguido	Adjetivo Calificativo Normal	FS
contrastaba	contrastar	Verbo Principal Normal	1ª S. IMP. IND
con	con	Preposición	Ø
la	el	Artículo Determinado	FS
lucidez	lucidez	Nombre Común	FS
de	de	Preposición	Ø
su	su	Determinante Posesivo	CS
mente	mente	Nombre Común	MS
		Puntuación Punto y Seguido	Ø
#		Final Oración	
El	el	Artículo Determinado	MS

Figure 19. *TL-Tag* (POS-Tagger and Lemmatizer)

III.1.3. Lemmatisation

The distinction between words (tokens), the word forms (types) and base forms (lemmas) is important. Consider the following word sequence: *plays, playing, played, play, plays, play, playing, played* and *played*, where we have nine words (tokens), four word forms (types) and one lemma, namely *play*. As mentioned above, standard concordancers would process inflected forms (tokens) of the same base form (lemma) as different word forms (types). A way of dealing with this and other potential problems (see *POS-section*), which can seriously affect the counting of linguistic items, is to classify together all the identical or related forms of a word under a common headword: lemmatisation; just as in a dictionary where the various morphological inflected and derived forms of a word are listed under a single entry. In order to handle the complexities of morphology, including irregularities, lemmatisers typically employ two different but combined processes: (1) case-by-case method to deal with irregularities, by means of rules; for example, *better* and *best* are listed and counted under the headword *good*; (2) affix stripping method; if a word form is not listed under any headword (case-by-case method), then a number of affix stripping rules are apllied; for example, the plural suffix *-s* is taken off the word form *cars*, outputting the base form *car*. Finally, if a word form does not appear as part of the affix rule

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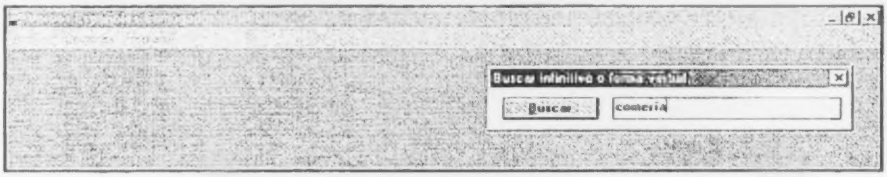
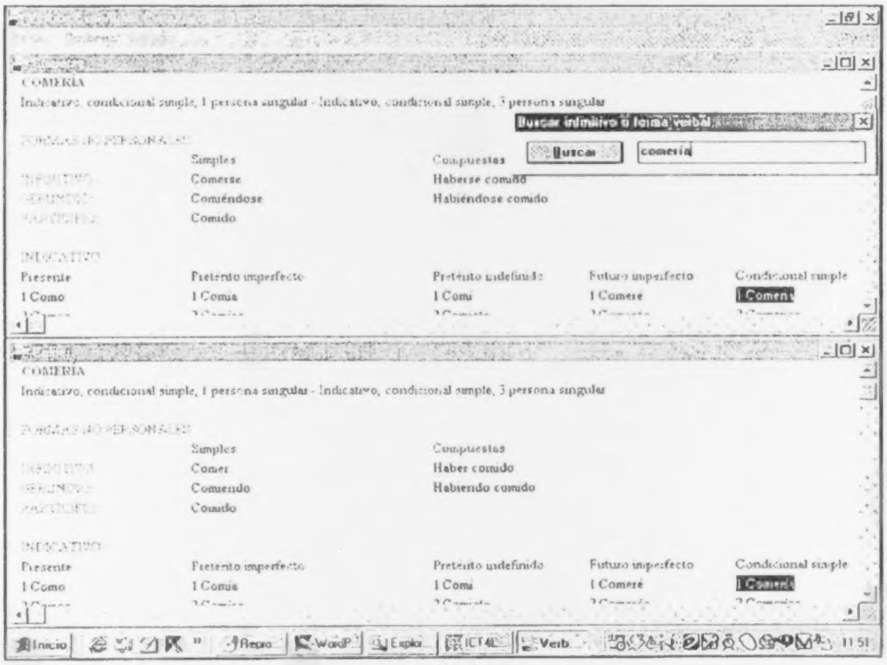
system, or is not listed as a specific exception, then the word is listed as a lemma in the same form in which it appears in the text. The lemmatisation process is normally performed automatically as part of the POS-process, producing enlarged tagged data lists: token, tag and lemma and grammatical information (gender, number, tense, etc.), i.e. *TL-Tag*[12] (*Figure 19*).

A useful CALL application based on the lemmatisation process is *Verbos Españoles Conjugados*[13] (*VEC*). *VEC* has been designed to assist students in the correct use and spelling of Spanish verbs. It can be used as a stand alone program or run parallel as a grammatical help tool; the student just needs to write any Spanish verb form and *VEC* feeds back with full information on tense, mood, person and number (*Figures 20* and *21*).



comeria

Figure 20. Student's Query



comeria

COMERIA

Indicativo, condicional simple, 1 persona singular - Indicativo, condicional simple, 3 persona singular

FORMAS NO PERSONALES

	Simples	Compuestas
INFINITIVO	Comerse	Haberse comido
GERUNDIO	Comiéndose	Habiéndose comido
PARTICIPIO	Comido	

INDICATIVO

Presente	Pretérito imperfecto	Pretérito indefinido	Futuro imperfecto	Condicional simple
1 Como	1 Comia	1 Comi	1 Comere	1 Comer

COMERIA

Indicativo, condicional simple, 1 persona singular - Indicativo, condicional simple, 3 persona singular

FORMAS NO PERSONALES

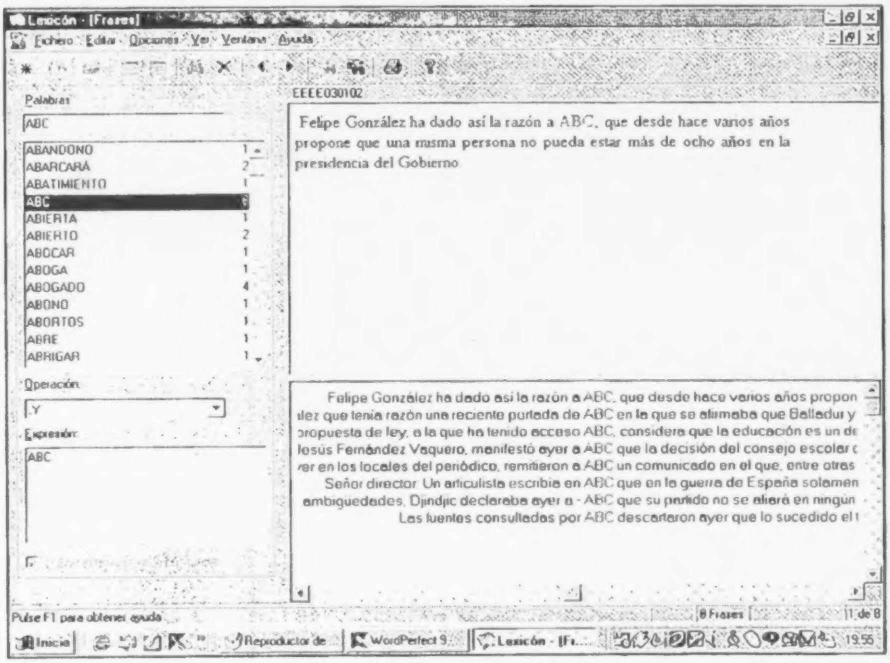
	Simples	Compuestas
INFINITIVO	Comer	Haber comido
GERUNDIO	Comiendo	Habiendo comido
PARTICIPIO	Comido	

INDICATIVO

Presente	Pretérito imperfecto	Pretérito indefinido	Futuro imperfecto	Condicional simple
1 Como	1 Comia	1 Comi	1 Comeré	1 Comer

Figure 21. Full Verb Information

A much more interesting and challenging application is *Tagcorder*[14]. *Tagcorder* has been implemented to allow complex searches within the *CUMBRE Corpus* (Sánchez et al. 1995) and takes full advantage of tagged and lemmatised data. Users can invariably look for terminal nodes (types; *Figure 22*), non-terminal nodes (POS-tags; *Figure 23*) with any additional tagged grammatical information (*number, person, mood, tense,* etc.), base forms (lemmas; *Figure 24*) and/or any combinations of types, POS-tags and lemmas; *Figures 25* and *26*). The program itself is very interactive and flexible in its search procedure and extremely fast as it works with pre-indexed text.



Palabras: ABC

ABANDONO	1
ABARCARÁ	2
ABATIMIENTO	1
ABC	8
ABIERTA	1
ABIERTO	2
ABOCAR	1
ABOGA	1
ABOGADO	4
ABONO	1
ABORTOS	1
ABRE	1
ABRIGAR	1

Operación: Y

Expresión: ABC

EEEE030102

Felipe González ha dado así la razón a ABC, que desde hace varios años propone que una misma persona no pueda estar más de ocho años en la presidencia del Gobierno

```
          Felipe González ha dado así la razón a ABC, que desde hace varios años propon
ález que tenía razón una reciente portada de ABC en la que se afirmaba que Balladur y
propuesta de ley, a la que ha tenido acceso ABC, considera que la educación es un de
Jesús Fernández Vaquero, manifestó ayer a ABC que la decisión del consejo escolar c
ver en los locales del periódico, remitieron a ABC un comunicado en el que, entre otras
       Señor director. Un articulista escribía en ABC que en la guerra de España solamen
   ambiguedades. Djindjic declaraba ayer a - ABC que su partido no se aliará en ningún
                      Las fuentes consultadas por ABC descartaron ayer que lo sucedido el t
```

Figure 22. Type Search "ABC"

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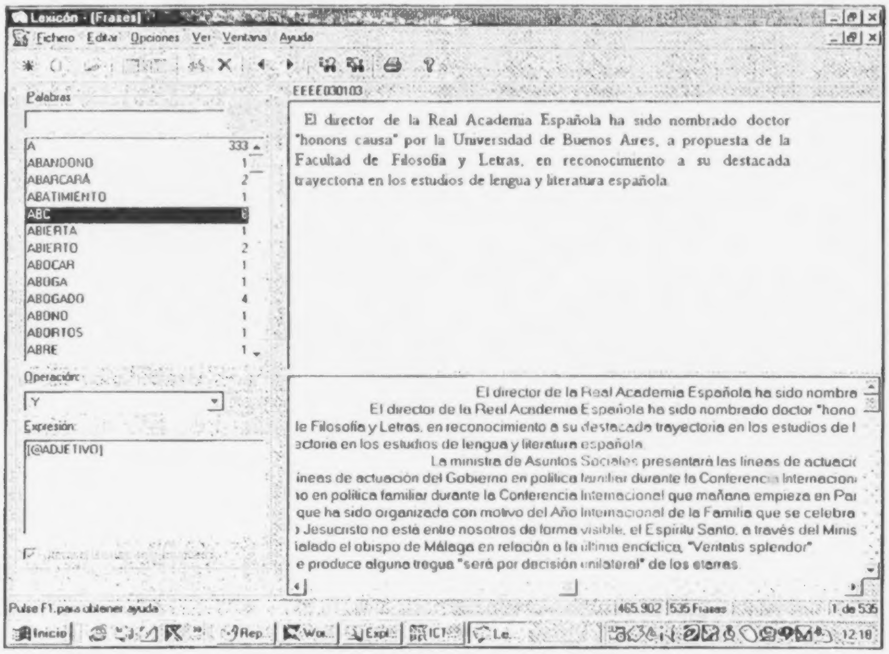


A	333
ABANDONO	1
ABARCARÁ	2
ABATIMIENTO	1
ABC	8
ABIERTA	1
ABIERTO	2
ABOCAR	1
ABOGA	1
ABOGADO	4
ABONO	1
ABORTOS	1
ABRE	1

Operación: Y

Expresión: [@ADJETIVO]

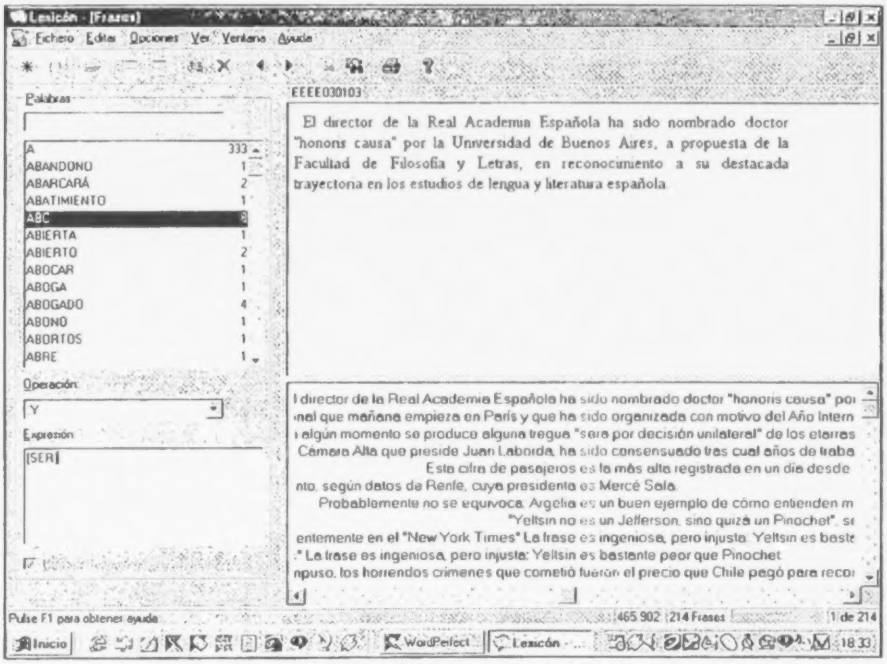
EEEE030103

El director de la Real Academia Española ha sido nombrado doctor "honoris causa" por la Universidad de Buenos Aires, a propuesta de la Facultad de Filosofía y Letras, en reconocimiento a su destacada trayectoria en los estudios de lengua y literatura española.

El director de la Real Academia Española ha sido nombra
El director de la Real Academia Española ha sido nombrado doctor "hono
le Filosofía y Letras, en reconocimiento a su destacada trayectoria en los estudios de l
ectoria en los estudios de lengua y literatura española.
La ministra de Asuntos Sociales presentará las líneas de actuaci
íneas de actuación del Gobierno en política familiar durante la Conferencia Internacion
no en política familiar durante la Conferencia Internacional que mañana empieza en Par
que ha sido organizada con motivo del Año Internacional de la Familia que se celebra
Jesucristo no está entre nosotros de forma visible, el Espíritu Santo, a través del Minis
ialado el obispo de Málaga en relación a la última encíclica, "Veritatis splendor"
e produce alguna tregua "será por decisión unilateral" de los etarras.

Pulse F1 para obtener ayuda | 465.902 | 535 Frases | 1 de 535

Figure 23. POS-Search "ADJECTIVE"



A	333
ABANDONO	1
ABARCARÁ	2
ABATIMIENTO	1
ABC	8
ABIERTA	1
ABIERTO	2
ABOCAR	1
ABOGA	1
ABOGADO	4
ABONO	1
ABORTOS	1
ABRE	1

Operación: Y

Expresión: [SER]

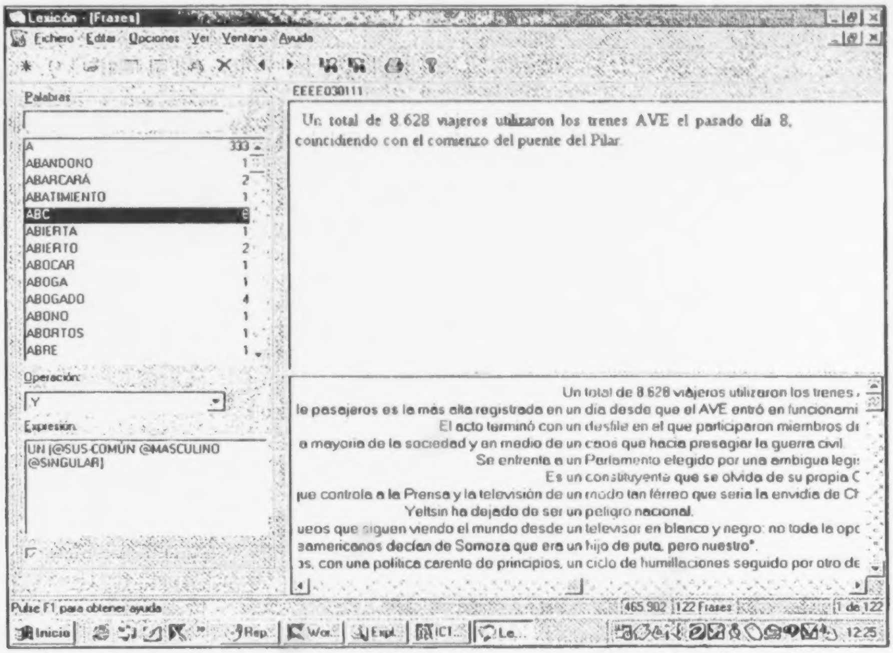
EEEE030103

El director de la Real Academia Española ha sido nombrado doctor "honoris causa" por la Universidad de Buenos Aires, a propuesta de la Facultad de Filosofía y Letras, en reconocimiento a su destacada trayectoria en los estudios de lengua y literatura española.

l director de la Real Academia Española ha sido nombrado doctor "honoris causa" por
nal que mañana empieza en París y que ha sido organizada con motivo del Año Intern
algún momento se produce alguna tregua "será por decisión unilateral" de los etarras
Cámara Alta que preside Juan Laborda, ha sido consensuado tras cual años de traba
Esta cifra de pasajeros es la más alta registrada en un día desde
nto, según datos de Renfe, cuya presidenta es Mercé Sala.
Probablemente no se equivoca. Argelia es un buen ejemplo de cómo entienden m
"Yeltsin no es un Jefferson, sino quizá un Pinochet", se
entemente en el "New York Times" La frase es ingeniosa, pero injusta. Yeltsin es baste
." La frase es ingeniosa, pero injusta: Yeltsin es bastante peor que Pinochet.
npuso, los horrendos crímenes que cometió fueron el precio que Chile pagó para reco

Pulse F1 para obtener ayuda | 465.902 | 214 Frases | 1 de 214

Figure 24. Lemma Search "SER"


Lexicón - [Frases]
Fichero Editar Opciones Ver Ventana Ayuda
Palabras
Operación:
Expresión:
Pulse F1 para obtener ayuda
Inicio
Rep.
Wo...
Expl.
ICI...
Le...
12:25

A	333
ABANDONO	1
ABARCARÁ	2
ABATIMIENTO	1
ABC	6
ABIERTA	1
ABIERTO	2
ABOCAR	1
ABOGA	1
ABOGADO	4
ABONO	1
ABORTOS	1
ABRE	1

Operación: Y

Expresión: UN [@SUS-COMÚN @MASCULINO @SINGULAR]

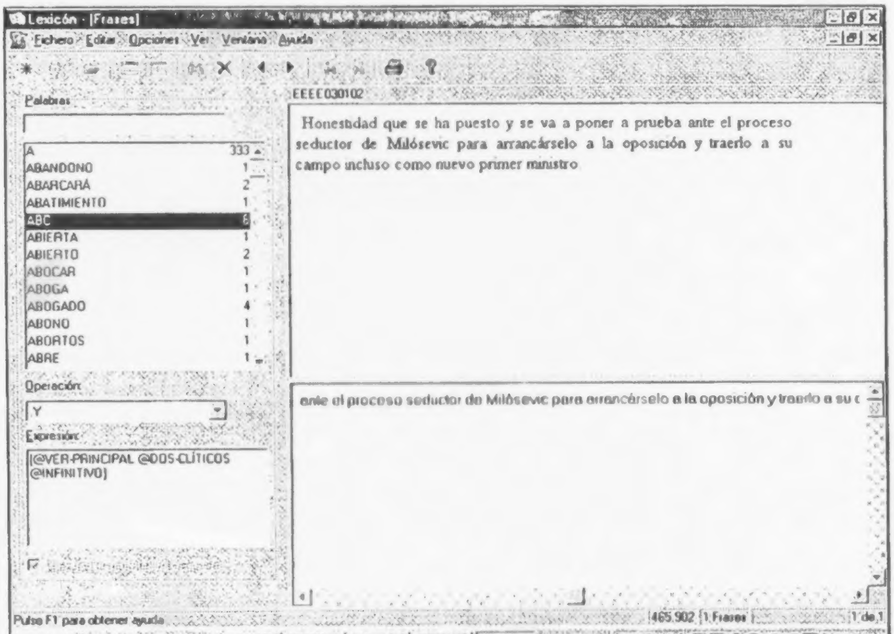
EEEE030111

Un total de 8.628 viajeros utilizaron los trenes AVE el pasado día 8, coincidiendo con el comienzo del puente del Pilar.

Un total de 8.628 viajeros utilizaron los trenes
le pasajeros es la más alta registrada en un día desde que el AVE entró en funcionami
El acto terminó con un desfile en el que participaron miembros d
a mayoría de la sociedad y en medio de un caos que hacía presagiar la guerra civil.
Se enfrenta a un Parlamento elegido por una ambigua legi
Es un constituyente que se olvida de su propia C
jue controla a la Prensa y la televisión de un modo tan férreo que sería la envidia de C
Yeltsin ha dejado de ser un peligro nacional.
ueos que siguen viendo el mundo desde un televisor en blanco y negro: no toda la opc
aamericanos decían de Somoza que era un hijo de puta, pero nuestro".
os, con una política carente de principios, un ciclo de humillaciones seguido por otro de

465.902 | 122 Frases | 1 de 122

Figure 25. Complex Search: "UN" + NOUN (Common Countable + Masculine + Singular)


Lexicón - [Frases]
Fichero Editar Opciones Ver Ventana Ayuda
Palabras
Operación:
Expresión:
Pulse F1 para obtener ayuda
Inicio
Rep.
Wo...
Expl.
ICI...
Le...
12:28

A	333
ABANDONO	1
ABARCARÁ	2
ABATIMIENTO	1
ABC	6
ABIERTA	1
ABIERTO	2
ABOCAR	1
ABOGA	1
ABOGADO	4
ABONO	1
ABORTOS	1
ABRE	1

Operación: Y

Expresión: [@VER-PRINCIPAL @DOS-CLÍTICOS @INFINITIVO]

EEEE030102

Honestidad que se ha puesto y se va a poner a prueba ante el proceso seductor de Milósevic para arrancárselo a la oposición y traerlo a su campo incluso como nuevo primer ministro.

ante el proceso seductor de Milósevic para arrancárselo a la oposición y traerlo a su c

465.902 | 1 Frases | 1 de 1

Figure 26. Complex Search: VERB (Main + Two Clitics + Infinitive)

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III.1.4. Parsing

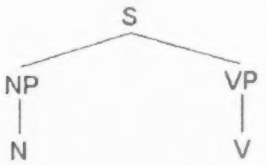
Parsing involves the procedure of bringing basic morphosyntactic categories into high-level syntactic relationships with one another. This is probably the most commonly encountered form of corpus annotation after POS tagging. Parsed corpora are sometimes known as *treebanks*.

There are rules governing the way in which words can be put together to form syntactically well-formed or grammatical sentences: the study of syntax aims to discover them and to describe and analyse language in terms of these rules. Consider the sentence *A dog chased that girl*, where we find the same pattern of constituents before and after the verb, that is *determiner + noun*. These two words also appear to be belong together more closely than say the noun *dog* and the verb *chased*. Another way of illustrating that these words belong together is to give the *girl* and the *dog* a name —names of specific items such as individual people, animals, places and so on called *proper nouns*—, and we get, for example *Henry chased Carol*.

It seems clear that natural languages or human languages have a role of *constituent structure*. A sentence is not just a mere string of words. The words are grouped into phrases, each of which consists of a short phrase. Many of the important properties of languages are organised around constituent structure. Constituent structures (a) group words into constituents such as *the dog* and *into the garden*; (b) give names to the constituents, such as *noun phrase* and *prepositional phrase*. In turn, constituent structures are sanctioned or generated by rules, known as *phrase-structure rules* of this type:

$S \rightarrow NP\ VP$
$NP \rightarrow N$
$VP \rightarrow V$

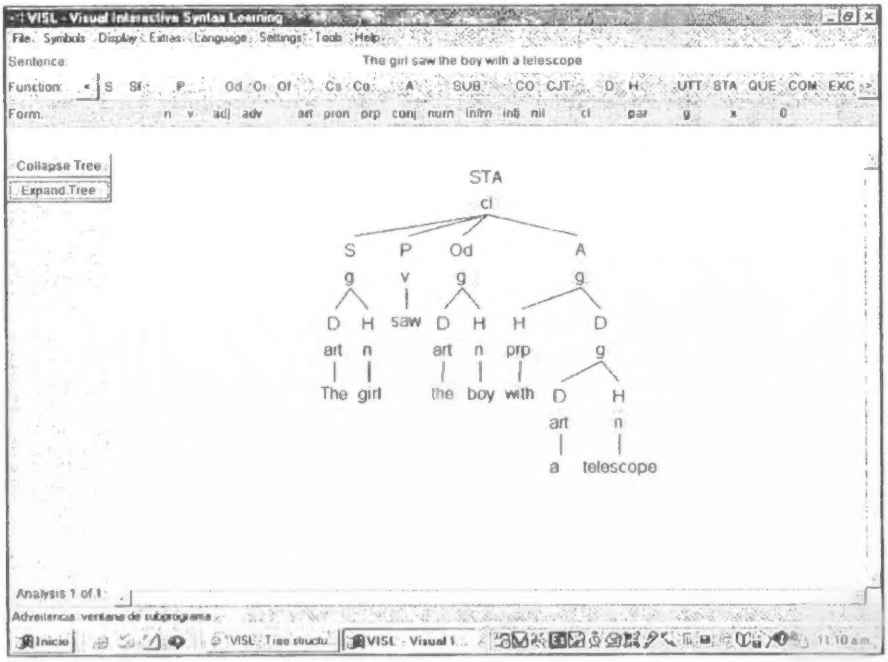
where S stands for sentence, NP for noun phrase, VP for verb phrase, N for noun and V for verb. So the PS-rules above states that a sentence consists of a noun phrase followed by a verb phrase. In turn, the NP of an N and the VP of a single V. The tree structure derived or generated by that rule would be



Parsing algorithms can proceed top-down or bottom-up. In some cases, top-down and bottom-up algorithms can be combined[15].

The Visual Interactive Syntax Learning (VISL) website[16] is particularly interesting and useful for language learners. It contains an on-line parser and a variety of other tools concerned with English grammar, including games and quizzes. The parser itself is an excellent and very transparent application that allows learners to analyse and experiment on sentences and study their structure (*Figure 27*).

Interesting in this respect is also the parsing of students erroneous input. Integrated parsers into CALL software can be prepared to deal with linguistic errors in the input. So the grammar that copes with correct sentences is complemented with a grammar of incorrect sentences. The advantage of this error grammar approach is that the feedback to students' ouput can be very specific and is normally fairly reliable as it can be attached to a very specific rule. However, the major drawback of this approach is that individual learner errors have to be anticipated in the sense that each error needs to be covered by an adequate rule.



Sentence: The girl saw the boy with a telescope

VISL - Visual Interactive Syntax Learning
File Symbols Display Extras Language Settings Tools Help
Function: < S Sf P Od Oi Of Cs Co A SUB CO CJT D H UTT STA QUE COM EXC >
Form: n v adj adv art pron prp conj num infm intj nil cl par g x 0
Collapse Tree
Expand Tree
STA
cl
S P Od A
g v g g
D H saw D H H D
art n art n prp g
The girl the boy with D H
art n
a telescope
Analysis 1 of 1
Advertencia: ventana de subprograma
Inicio
VISL: Tree structu...
VISL - Visual I...
11:10 a.m.

Figure 27. Visual Interactive On-Line Parser

III.1.5. Speech Technology[17]

CALL software has normally been restricted to written text. However, recent advances in multimedia have resulted into powerful hardware and software applications, allowing users to

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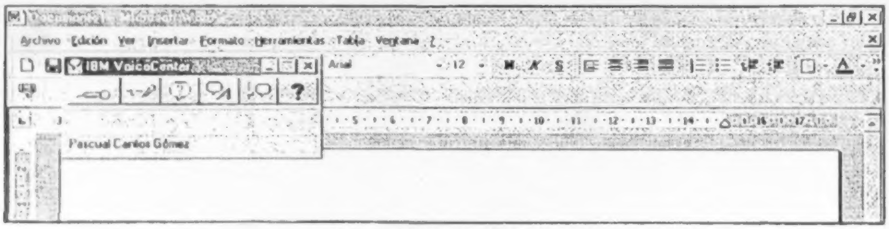
attach a microphone and loudspeakers to soundcards and to record his/her own voice. Furthermore, storing these sound files is no more a problem due to the immensely increased capacity and cost reduction of hard disks, other storage devices (CD-ROM) and improved compression algorithms for this kind of data (i.e. MP3 files).

Presently, there is a wide range of speech software available. This includes (a) spoken input processing[18] or speech analysis, where speech input is analysed and represented graphically or numerically; (2) speech recognition: the transformation of spoken input into written output; and (3) speech synthesis, that is the conversion of text to speech[19]; this includes no just matching characters to sounds, but also intonation and the rhythm particular utterances have. Advances in speech synthesis technology have reached a high level of performance and robustness and some CALL applications have started considering its integration[20].

In contrast, speech recognition is far more complex than speech synthesis. Speech recognition needs an extensive analysis of speech by means of a number of parameters, which are very difficult to establish as they can be easily affected by background noise, speech speed (connected speech), particular accents or idiosyncratic individual's speech. All this leads to complicate and interfere in the fixing and interpretation of the established parameters.

There are some commercial applications able to "understand" natural speech and can provide language students with realistic, highly effective, and motivating speech practice. One of this application is *IBM® ViaVoice®*. This program runs on normal PCs and includes speaker independent continuous speech recognition engines and is able to deal with complete sentences spoken at a natural pace, not just isolated words, though it requires a minor training period. To run the program, the user just needs to associate it with any wordprocessor, where the user's utterances will to be transcribed in (*Figure 28*) or run *Speech Pad*, a simplified standard wordprocessor that includes *ViaVoice*.

Many multimedia CALL courses already have and still include some naive direct pronunciation practice. That is, exercises which focus on pronunciation, fluency and word order, and with native speaker models which are heard immediately after a student's performance. These applications leave the learner-model comparison to student's criteria or visualise graphically both performances, indicating the success rate in %. The negative side of these exercises is that in some instances it is even for native speakers of the language very difficult, if not impossible, to achieve satisfactory success rates. Some of these applications are neither very flexible nor accurate and sometimes students would need to repeat their utterances in several occasions before the program "understands" them correctly. In turn, this might lead to some small frustration.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IBM VoiceCenter
Arial
12
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Pascual Cantos Gómez

Figure 28. *IBM ViaVoice*

V. CONCLUSION

CALL has for long been dominated by the drills and practice associated with behaviourism (cloze and gap-filling exercises, multiple-choice tests, etc.) and, eventually, the use of some basic word-processing tools. Soon, some language teachers and CALL practitioners reacted negatively and noted a lack of progress in CALL (Kaliski 1992, Last 1992, etc.), partially due to the:

- Limited CALL software available
- Reduced number of computational exercises
- Incompatibility between employed CALL techniques and current language teaching pedagogy (particularly influential in this respect has been the emergence communicative syllabus)
- Consequence of new technology being unable to fulfill teachers' expectations

Fortunately, things have changed for CALL in the 90s, partly because of the wider availability of PCs and the integration of linguistic corpora and NLP-technology. The use of linguistic corpora and NLP-applications are highly valuable tools for language description with important implications for language teaching, as they can:

- Assist language teacher in identifying relevant content of instruction (vocabulary, grammar, contexts, etc.), and
- Help in developing new pedagogical and methodological approaches to instruction (i.e. shifting the pedagogical teaching/learning paradigm from computer as magister to computer as pedagogue).

Modern CALL has changed and instead of adapting it to what software can offer, an attempt is made to get it to take account of the necessary conditions of successful language learning. Learners are given much more control over what they learn: autonomous language learning in self-paced, more interactive, meaning dominated, task-oriented activities (Kennedy

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1998: 293).

Particularly interesting in this respect is the use of real and relevant text sample for students and teachers as the central pedagogical teaching/learning cornerstone. Real time manipulation of texts by students using integrated user-friendly interfaces, including word-processing tools and NLP-applications could conform an extremely valuable pedagogical paradigm within the foreign language learning/teaching context. Teachers would be able:

- To extract, manipulate and adapt texts to students needs and language level
- To enrich plain texts with POS-tags and syntactic annotations for class work
- To extract vocabulary lists, phase lists, concordance lists, etc. (sublanguage specific, adapted to a specific level, or domain, etc.)
- To generate automatically *ad hoc* exercises, depending on students' particular needs.

Similarly, students could also take advantage of this integrative CALL application

- To explore the target language by means of concordancers with integrated taggers and parsers and/or tagged texts and treebanks
- To extract the gist of more difficult texts, using MT-software
- To check the meaning of words and phrases (electronic dictionaries)
- To generate automatically *ad hoc* exercise generation, depending on one's own needs
- To hear the text, selected sentences or words, using speech synthesizers
- To answer orally to some responses, dictating the solutions to the computer (speech recognition tools)

Actually, what we propose is a sophisticated CALL language processing tool[21] that

- Takes full advantage of current computational advances in an integrated and unitary way:
  - Electronic dictionaries (monolingual, bilingual or multilingual ones)
  - MT systems
  - POS-taggers
  - Syntactic parsers
  - Concordancers
  - Speech production/recognition
  - Word-processors (this includes spell-checkers and grammar and style checkers)
- Goes beyond written text, as it also accounts for oral production and oral recognition
- Assists both teachers and students in their respective tasks and that could contribute to new and challenging pedagogical and methodological paradigms in the area of foreign language learning.

And since we have all these computational tools are our disposal, it makes no sense to renounce their application in such an important area as language pedagogy. We cannot dismiss them, we must use them ...

NOTES

1. See among others, the Oxford Concordance Program (OUP 1988), Longman Mini Concordancer (Chandler and Tribble 1989), MicroConcord (Scott and Johns 1992), MonoConc (Barlow 1996), TACT (Bradley and Presutti 1989), or WordSmith (Scott 1999).
2. http://web.bham.ac.uk/johnstf/timconc.htm
3. *Context* can be downloaded free of charge for non-commercial purposes from Tim Johns DDL-web page: http://web.bham.ac.uk/johnstf/timconc.htm
4. Sánchez, A. and P. Cantos (2000) *Practica tu vocabulario*. Madrid: SGEL.
5. For a more comprehensive survey, visit "Module 3.5. Human Language Technologies (HLT)" of the *Information and Communications Technology for Language Teacher* (ICT4LT) web page: http://www.ict4lt.org/en/en_mod3-5.htm
6. Hutchins and Somers (1992) and Arnold et al. (1994) provide excellent introductions to MT.
7. The MT system used here is *Spanish Assistant* (MicroTac Software). Other commercial MT software: *Systran* (http://babelfish.altavista.digital.com/) or *Power Translator* (http://www.lhsl.com/powertranslator/).
8. See Greene and Rubin (1971) for a detailed description of this tagger.
9. Described in detailed by Garside (1987) and Marshall (1987).
10. To get a free copy, for academic purposes only, e-mail Rafael Valencia (rafavalencia@ono.es), Rodrigo Martinez (rodrigo@dif.um.es) or Pascual Cantos (pcantos@um.es).
11. Where 0 = English and 1 = Spanish.
12. *TL-Tag* (TechnoLingua) is part of the *CUMBRE Corpus* Project and is not yet commercially available. For those interested in it contact any of the people involved in the Project: Enrique Pérez de Lema (delema@jazzfree.com), José Simón (jsg38746@teleline.es), Aquilino Sánchez (asanchez@um.es) or Pascual Cantos (pcantos@um.es).
13. Diez, P. L. and J. Iborra (1999) *Verbos Españoles Conjugados*. Madrid: SGEL.
14. See endnote 12.
15. Allen (1995), Convigton (1994) and Gazdar and Mellish (1989) include excellent introductory sections on parsing algorithms.
16. http://visl.hum.ou.dk/
17. An excellent site is Integrating Speech Technology in (Language) Learning: http://www.instil.org.
18. Among the many interesting web sites, check: http://agoralang.com/signalyze.html.
19. A good example is *Winspeech*: http://www.pcww.com.
20. The Polytechnic University of Hong Kong site includes a number of text-to-speech tools: http://ylc.polyu.edu.hk/TextToSpeech
21. We have deliberately not considered the integration of *Information Technologies* here. This would have inevitably expanded the potential of the "tool" proposed here.

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Third Generation Telephony: New Technological Support for Computer Assisted Language Learning

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ABSTRACT

The expansion of the Internet has led to the development of distance teaching models based on the net (e-learning). One of the crucial factors in this phenomenon is the continuous training required by workers to maintain or improve their professional skills. Foreign languages are, without doubt, one of the most in demand subjects. This is because they are needed for communication in an increasingly globalized world.

The development of new wireless communication technologies, UMTS or 3G nets, and their corresponding access terminals (Palm-size PCs, PPCs, with wireless telephone connection, also called smart-phones), will enable solutions to be found for some of the problems faced by current e-learning users. These problems include access speed and the physical constraints of the terminal. The new wireless communication technologies will bring other benefits like portability, always on-line, etc.

This article presents one of the world's first prototypes of language learning software for smart-phones, produced by the Laboratorio de Ingenieria Didactica e Ingenieria Linguistica of UNED (Didactic Engineering and Linguistic Engineering Laboratory) (LIDIL, http://www.vip.uned.es). *Tele-EnREDando.com* is an Internet based multimedia application designed for 3G mobile phones with audio, video and interactive exercises for learning Spanish for business.

KEYWORDS: CALL, UMTS, mobile phone, Internet, access device

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I. INTRODUCTION

Society today is in the midst of a dramatic phase of technological development. Progress is taking place in every scientific field. This transformation is due, to a great extent, to the progress in computer science and telecommunications, which have transformed knowledge into a key factor for the economies of the developed countries. This is why we speak of the 'information society', or lately, and in our opinion more appropriately, of the 'knowledge society'. Monereo (2000) states:

> New information and communication technologies are gradually bringing about a revolution which is already beginning to be considered as far-reaching and significant as its predecessors. This, however, is a revolution based on information and knowledge, that are likely to become a resource that changes the way we work and the way we live.

Among all of the factors that have contributed to social transformation, almost everybody agrees that there is one that stands out above all others: the Internet. The net is changing many of our every day activities: from the way we buy and sell, and the way in which we conduct business, to interpersonal relationships.

The demand for distance training is another consequence of modern society; society today requires people to undertake constant training throughout their professional life, so that they can maintain or improve their capacity in a changing and competitive workplace. Teaching without the teacher being present thus becomes a necessity, because it is precisely the model of training which is compatible with the professional obligations of the student.

II. INTERNET AND EDUCATION

Of course, the Internet revolution has also decisively affected the educational world. All agents of the training process have been affected, from teachers to students, educational materials, forms of communication, and so on.

The Internet has proved to be a very powerful educational tool. There are two main reasons for this:

1. The capacity to distribute information rich in content[1] in a simple and quick way.
2. The ease of establishing cross-communication: between students, between teachers, and, of course, between teachers and students.

This particular adaptation of the Internet for education made possible the development of a model for distance learning, based solely on the use of the net. This is usually called virtual education or e-learning.

Virtual education is no more, however, than an additional means to carry out distance training, since all that changes is the way in which material is distributed to students (from printed material to material in digital form) and the development of the tutorial function (email or IRC substitute the telephone). With regard to this Heppel (2000) affirms, very much to the point in our opinion, the following:

> E-Learning underpins learning with technology, but that in itself is not new. The information that people learn with, and the conduits through which they communicate that learning, have always been both liberated and, paradoxically, constrained by technology. From the earliest primitive forms of writing through to the coolest pocketable digital media this holds true.

However, the virtual classroom (Heppel 2000) is particularly efficient, because it makes the traditional model of distance learning based on printed material and telephone tutoring even more flexible:

> Mediante el *e-learning*, la gente accede a lo que necesita en el momento que lo precisa, tal es la inmediatez del sistema. De este modo se superan realmente las barreras geográficas de tiempo.[2]

Virtual training is starting to impose itself, albeit slowly and with problems, and it is starting to become a method which is not only accepted, but demanded by students. The initial scepticism about the validity of e-learning has been overcome, and it seems that there are no more doubts about the virtual model. For example, Fernández (1999) says "En la clase virtual podemos llegar a la mismas cotas de éxito que se dan en cualquier otro tipo de situación de aprendizaje."[3] And Borreguero (2000) points out that "con todo ello no nos precipitamos al decir lo siguiente: En las aulas virtuales puede que se encuentre la clave del futuro de la formación educativa"[4]:

> According to *IDC's Distance Learning in Higher Education: Market Forecast and Analysis, 1999-2004*, the number of colleges and universities offering e-learning will more than double, from 1,500 in 1999 to more than 3,300 in 2004. Student enrolment in these courses will increase by 33% annually during this time.[5]

III. THE INTERNET AND LANGUAGE TEACHING

Business administration subjects, and all those related with information technology and telecommunications, are among the subjects most in demand in virtual teaching. In particular, we can highlight the connections between them all, because there are more and more courses on e-commerce, as traditional firms look for alternative business models using the Internet to diversify and expand.

However, there is no doubt that the command of foreign languages has become a necessity to achieve professional success. This has been generated by the growing demand for the exchange of information between people of different nationalities who work thousands of kilometres apart. As a consequence, the teaching of languages in the modern world is one of the most in demand subjects because it makes access to knowledge easier and its exchange possible.

Thus, society demands training in foreign languages, mainly in the English language, which is compatible with professional obligations. This implies distance learning and, once again, the Internet is prominent.

With time, the initial doubts about the effectiveness of the net in the teaching or learning of languages have disappeared. Ruipérez (1997:24) points out, speaking mainly about the teaching of Spanish as a foreign language (E/LE), the following:

> Las posibilidades de intercambio de todo tipo de información multimedia por parte de la Web ya han empezado a cambiar las formas de aprendizaje del E/LE, a pesar de encontrarnos en la fase inicial de desarrollo. El fenómeno Internet, al igual que el fenómeno multimedia, son dos recursos que seguirán potenciando enormemente el uso del microordenador en al aprendizaje del E/LE, pues parecen haber sido creados a la medida para ese fin.

And Moehle-Vieregge (1997:v) concludes:

> Foreign language learners and instructors have discovered the Web's value as an educational resource and instructional tool with endless possibilities.

This current of generalised opinion does not rule out different nuances and currents of thought as regards how to accommodate the Internet to the learning of foreign languages. However, this problem has not been generated by the appearance of the net, because fundamentally it involves the already existing discussions about second language acquisition, which also affect, for example, traditional face-to-face teaching.

The main obstacle is still the design of didactic material, which is probably very poor and limited at present on the Internet. Now, it is fair to expect that, just as printed material has evolved according to the existing pedagogic theories of the time, the same will happen with the contents of the net, since it is a very new medium.

Warschauer & Healy (1998) have a very different point of view, which may be used as the final overall reflection of this very brief review, since the debate about this subject is still very much ongoing:

> As the developed world moves from the industrial age to the information age, economic activity and growth is based less on the input of more labor and capital and more on the exchange and interpretation of information and the development of knowledge (Castells, 1993; Castells, 1996). In such a society, it is safe to assume that the ability to read, write, and communicate effectively over computer networks will be essential for success in almost every sphere of life. Given these circumstances, the question might become less «what is the role of informational technology in the language classroom»" and more «what is the role of the language classroom in the information technology society».[6]

IV. NEW ACCESS TERMINALS TO THE INTERNET

Nowadays, most users gain access to the Internet via a personal computer. This type of access has, among others, two disadvantages:

1. Access speed is generally slow since most users connect using conventional telephone lines, which have frequent communication breakdowns and which guarantee in the unlikely case of optimal performance, a connection of 56.6Kbps[7]. This transmission capacity, also called bandwidth, is not appropriate for example, for the transmission/reception of audio or video with acceptable quality[8].
2. Physical dependence, that is, the user has to be physically in front of the computer. This inconvenience, which may seem trivial in principle, is not so if we take into account the growing mobility of people, and the inconvenience of not being able to use the Internet in slack time anywhere. We can comfortably read a book on a train or in a waiting room, etc., but we cannot use a computer, not to mention having access to the net.

The comfort, which often becomes necessary, of access anywhere and anytime to information, together with the technological advances of the last few years, are the stimuli behind the development of advanced mobile telephones that allow access to the Internet. These terminals are called third generation mobile phones, or 3G, and will probably be, in the near future, the most heavily-used consumer devices to search the Internet.[9]

The use of a 3G phone resolves the two disadvantages previously pointed out, since it uses advanced communication protocols that allow much greater real speeds of data transmission which are very acceptable, for example, for the adequate reception of audio and video, and they are completely portable, like a pocket book.

These new terminals are really evolved versions of palm computers (PPC, Palm-size Personal Computer)[10], which were already available on the market, to which a wireless system of data transmission is connected, that is, a mobile phone. The PPC are personal computers of reduced size which have been transformed since the traditional electronic diaries, which had a calendar, contact list and a "to do" work. They are now much more powerful, and they also have more general software, like visual web page display, word processing, calculation pages, and so on, all totally compatible with the versions of the equivalent conventional PC. Among the most widespread PCC models we can highlight Palm Pilot, Cassiopeia and iPaq, marketed by Palm, Casio and Compaq respectively.

Figure 1: Different PPC models: Palm m505, iPaq H3660 and Cassiopeia BE-300
(Source: http://www.palm.com, http://www.compaq.com y http://www.casio.com, respectively)

Many of these PCC have expansion slots which allow the connection of additional peripherals, like, for example, a modem. In this way, they allow access to the Internet in a way equivalent to a conventional PC, though, of course, with the same disadvantages already outlined. The breakthrough has been in integrating a mobile phone into these palm computers. Therefore, they can be used to obtain access to the Internet anywhere and anytime, and also to establish voice communications, in the same way as with conventional cellular phones.

The great revolution has been that, in parallel with these events, the protocols used by mobile telephones have evolved, to the point of achieving some that guarantee a much higher speed in data transmission. The most widespread mobile telephony protocol nowadays[11] is GMS[12], which allows data transmission speeds of 9.6 Kbps., while its successors, called GPRS[13] and UMTS[14], allow over 171 Kbps. and 2000 Kbps respectively. The increase in the bandwidth is considerable, if we compare it with the 56.6 Kbps. that a PC modem offers.

GPRS is an evolution of the GMS which will facilitate the transition to the ultimate objective, which is none other than UMTS. This is a completely new technology, which will completely change the terminals and the transmission nets of telecommunication operators.

While we wait for the definitive takeoff of the UMTS, estimated by some analysts for 2004 or 2005, the first third generation mobile phones for GPRS are already available on the market, among which we can undoubtedly highlight, the Siemens SX-45, a combination of Cassiopeia PCC, from Casio, with a Siemens GSM/GPRS mobile phone.

Pocket Internet Explorer

Figure 2: Siemens SX-45 (Source: http://www.siemens.com)

It has a high definition colour screen and it is equipped with full multimedia capacities[15] , being based on the Pocket PC operational system, which means it can reproduce audio, video. It also has the Internet browser 'Pocket Internet Explorer', e-mail programmes, and so on.

Like all 3G telephones, the SX-45 has some disadvantages, among which we can highlight:

1. Reduced size screen, which limits the quantity of information that can be seen at any one time.
2. Data entry, which is done by means of a virtual keyboard that appears on the touch screen, which the user uses to introduce the characters one by one using a pointer.

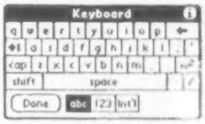


Figure 3: Virtual keyboard of Palm m505 (Source: http://www.palm.com)

With regard to the first problem, there is no worse inconvenience than to design Web pages intended for this screen size. There also are some solutions for the second problem, like folding keyboards that can be connected to the device, or voice recognition programmes which function as dictating machines.

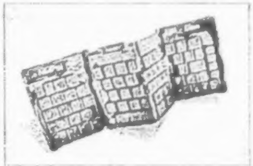


Figure 4: Folding keyboard adaptable for a PPC

Despite the inconveniences, it has many advantages which, as we mentioned earlier, will probably end with the gradual replacement of the PC, as we know it, by these 3G phones. This prediction is based on data such as the level of penetration of mobile telephony in society[16] and unquestionable advantages such as mobility and personalisation, the possibility of offering geographically specific services[17], etc.

This hypothesis is also endorsed by the success of i-mode in Japan, a project comparable, to a great extent, to the introduction of UMTS in Europe. This pioneering initiative, carried out by the Japanese telecommunications operator NTT DoCoMo, allows users to surf the Internet[18], send e-mails, and so on. Its success has been so remarkable that NTT DoCoMo has already announced that it will soon start to offer the same service in Europe.

V. THE TEACHING OF LANGUAGES ON 3G MOBILES

To illustrate the real possibilities of the latest generation mobile phone, a prototype of multimedia application for language learning specially designed for the Siemens SX-45[19] has been developed in the Didactic Engineering and Linguistic Engineering Laboratory (LIDIL)[20] of UNED.

The chosen content was an area of business Spanish for foreigners, adapted from a unit of EnREDando[21], an Internet multimedia course in Spanish language and culture, also produced by the LIDIL. The interested users are students with upper intermediate levels of Spanish. Each unit is based on a video, which is accompanied by exercises for students. The student also has access to a glossary containing words whose meaning may cause difficulty.

From an initial Web page the student can access the home page of each unit, and also the glossary:

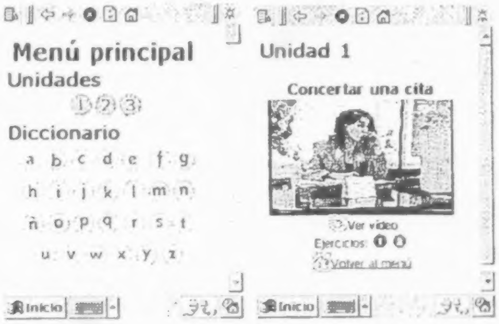
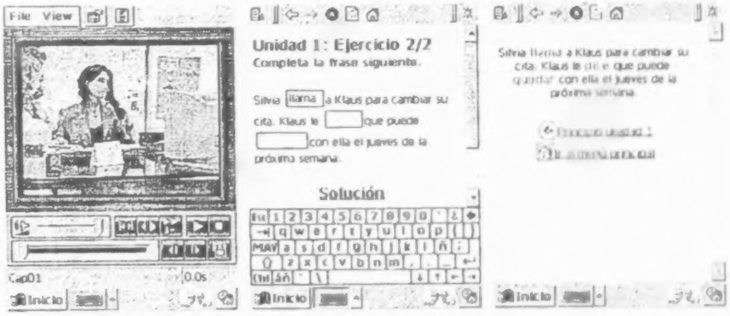

Menú principal
Unidades
1 2 3
Diccionario
a b c d e f g
h i j k l m n
ñ o p q r s t
u v w x y z
Unidad 1
Concertar una cita
Ver video
Ejercicios: 1 2
Volver al menú
Inicio

Figure 5: Main menu and home page of Unit 1. © LIDIL, 2001.

From the first screen of each unit the student can start the video, and, subsequently, carry out the suggested exercises:


File View
Cap01
0.0s
Inicio
Solución

Unidad 1: Ejercicio 2/2

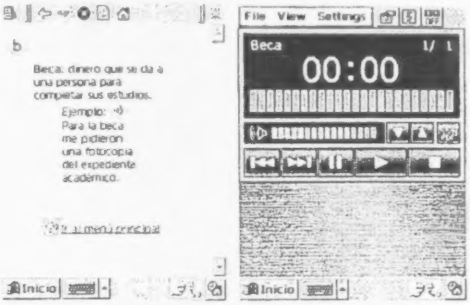
Completa la frase siguiente.

Silvia [llama] a Klaus para cambiar su cita. Klaus le [ ] que puede [ ] con ella el jueves de la próxima semana.

Silvia llama a Klaus para cambiar su cita. Klaus le dice que puede quedar con ella el jueves de la próxima semana.

Figure 6: Video play back. Fill in the blanks exercise and solutions © LIDIL, 2001.

As has already been mentioned, the user also has a glossary at his/her disposal, which allows him/her to look up terms he/she may find difficult to understand. There is a definition for each entry, the example, which appeared on the video and also the corresponding audio extract:



Beca: dinero que se da a una persona para completar sus estudios.

Ejemplo: Para la beca me pidieron una fotocopia del expediente académico.

Figure 7: Entry of the audio glossary and play back of the associated audio © LIDIL. 2001.

The tests carried out on students had very satisfactory overall results. In the surveys, the students proved to be very motivated and positively impressed by the qualities of the media. In particular, it is worth mentioning the positive comments about the video, a very motivating element, and, in general, about the multimedia functions of the device, capable of reproducing audio-visual files of great quality. The students proved the potential of the tool, they did not feel disorientated and they found it easy to use. The results were equivalent to the ones obtained with the EnREDando version for conventional PCs.

On the negative side, the users highlighted the difficulty of data entry, which is done by means of a virtual keyboard and a pointer, and which they found slow and somewhat complicated.

VI. CONCLUSIONS AND PROSPECTS

As we have seen, third generation mobile phones are very versatile devices, which have functions equivalent to a conventional PC. Despite the present limitations, complex applications can be developed, which give good results with students.

Some Spanish newspapers, like El País or El Mundo, already offer the possibility of downloading their electronic versions for PPC. We envisage a growth in the number of services available for these devices, and it can be expected that the great reception of GSM mobile telephony will be repeated with following generations, though it probably will not be so dramatic.

It is also foreseeable that the audio and video services in demand, probably via the pay as you go business model, will be in greater demand, as they will allow the viewing of films, video lessons, and so on.

It also seems likely that personalised business will become more important. The use of terminals designed principally for individual use will permit the definition of user profiles and as a result of this provide contents to satisfy individual needs, authorise access to restricted contents, or carry out on-line exams, for example. The geographically specific services based on the physical position of the user, will be the other key ingredient for personalization. For example, it will be attractive for users to be able to automatically obtain information about a country in which they have just arrived.

As a final thought, maybe we should think about offering the user contents which depend on the access device, because this will in many cases be indicative of his/her needs at any one time. It is reasonable to think that there will be a diversification of the methods of information access: the Home PC for intensive work, and a 3G phone in more relaxed situations, in public places, etc. The learner will require heavier content from the PC because he/she is in a suitable environment for study, whereas from the third generation mobile phone he/she will require information that does not require much concentration, and will thus tend to have a more entertaining pedagogical approach

NOTES

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[1] Multimedia information: text, images, audio and video

[1] Multimedia information: text, images, audio and video.

[2] Vilá, J. (2001): "Formación en red a medida del cliente". In El Pais, Sunday, 11 November 2001.

[3] Fernández Pinto, J. (1999): "Tutorias virtuales". Espéculo, 11. [http://www.ucm.es/info/especulo/numero11/tutorias.html, 30/4/99].

[4] Borreguero, M. (2000): "El aula virtual como futuro de la formación". Click-On-It, december 2000.

[5] IDC.com (2000): "According to IDC's Higher Education Study, eLearning Spending and Enrollment Are on Course to Grow Steadily". [http://idg.com/www/pr.nsf/webPRForm?OpenForm&xregion=WW-&unid=B38BEFDF0F8A1B06882569B900617BD6; 15/10/01].

6Warschauer, M. & Healy, D. (1998): "Computers and language learning: an overview." Language teaching 31, 57-71. [http://www.gse.uci.edu/markw/overview.html; 16/3/2001].

[7] Kbps: abbreviation of kilobits per second. The speed of a transmission is usually measured in bits per second (bps). Kbps is a multiple equivalent to 1024 bps.

[8] More advanced connection technologies, like RDSI, ADSL or optic fibre wiring, are very adequate solutions to the slowness of the net. Unfortunately, its introduction in Spain is nowadays in a minority.

[9] And very probable for other tasks, since investigations tend to obtain a kind of "command at universal distance" to allow surf the net, open the garage door of our house, or start the heating system at home from our workplace.

[10] Or also PDA (=Personal Digital Assistant)

[11] Mainly in Europe.

[12] Global System for Mobile Communications.

[13] General Packet Radio Service.

[14] Universal Mobile Telecommunication System.

[15] The colour screen and the high quality capacity for audio and video reproduction are two of the most remarkable features of the SX-45, and they currently make it stand out technologically above the majority of other models available in the market.

[16] Only 25% of EU citizens have a PC, whilst 50% has a mobile phone. (Instituto de Estadistica de la Comunidad de Madrid (2001): "Estadistica «Sociedad de la información»". [http://www.comadrid.es/iestadis/historico/u3120701.htm; 26/11/01]). This amazing figure has been achieved moreover in an extremely short period of time.

[17] Based on the physical position of the user. For example, personalised contents can be offered depending on which country the user is in.

[18] More precisely for pages written in CHTML language, a subset of the HTML in which standard Web pages are written.

[19] This prototype could not have been developed without the unconditional support of Siemens A.G.Espana. We are also grateful to the Direccion de Tecnologias Avanzadas del Vicerrectorado de Metodologia, Medios y Tecnologia de la UNED, to the Unidad de Virtualizacion Academica, the Centro de Servicios Informaticos and the Centro de Produccion de Materiales Audiovisuales.

[20] El LIDIL (http://www.vip.uned.es), directed by German Ruiperez, it also includes Jose Carlos Garcia Cabrero, Mª Dolores Castrillo, Birgit Ott, Esperanza Roman, Antonio Ruiperez, Ricardo Mairal and Norberto Cerezal

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[21] EnREDando (http://www.enredando.org) is the result of a European project of the LIDIL of the UNED, in collaboration with the universities of Erlangen-Nürnberg (Germany), Braga (Portugal) and Parma (Italy). The EnREDando project has been directed by German Ruiperez. It is based on a computing development co-ordinated by Jose Carlos Garcia Cabrero with contents by Blanca Aguirre and Monika Guttack, and in which development many other people have collaborated.

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Compaq: http://www.compaq.com

Eurotechnology: http://www.eurotechnology.com

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A Minimalist Approach to Multi-level IT-human Integration in Translation Work[1]

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ABSTRACT

This article attempts to define the intimate relationship that is intended between classroom-based and laboratory-based activities, between private study and language class, between individual and collective effort, and between computer-centered and teacher-led learning. We tend to take it as an axiom of CALL that the place of IT is beside the teacher, its function complementary or suplementary. Typically, the teacher's role is usually one (occasionally just a couple) of these: designer, author, editor, tester, provider, trainer, checker or supervisor. Except when in a supervisory role, the teacher's role is taken over by the computer when the teacher's own activity stops. This is what we tend to call computer-aided instruction. In the vast majority of cases, the role of IT is extrinsic to the teacher's own activity. I shall try to demonstrate here that the aid that the computer is able to provide can be effectively brought right into the classroom as an integral, intrinsic part of the teacher's own activity and that, by doing so, it can enhance not only the teacher's activity but also the complementary role which is traditionally assigned to the computer. The processes described here were developed with a specific situation in mind, not atypical in, at least, British Higher Education: increased mixed ability and reduced teaching time. In a pedagogical context that, in spite of mission statement protestations, usually attempts to make the most of the average, they specifically target the lower and higher ability student ranges. New funding has been secured to continue with this research from September 2002.

KEYWORDS: Authoring tools, collaborative work, computer-aided instruction, ICT, Internet, mixed ability, self-access, teacher-computer integration, teacher-led learning, word-processing

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I. INTRODUCTION

The methodology described in this article has been developed for Spanish Translation seminars at the University of Northumbria, Newcastle upon Tyne (UNN), UK, over a period of years. It was prompted by practical issues concerning changes in four areas: curricular, technological, administrative and financial. The three latter changes kept demanding constant updating, when not discarding of materials, reworking and renegotiating access arrangements and, most importantly, curricular changes, affected final year students, especially those at either end of the proficiency spectrum. It was paramount to devise a system that would bypass as many difficulties at the time as possibly as well as providing a consistent CALL environment for the foreseeable future[2].

The methodology integrates standard classroom practices with in-class CALL support and, at the same time, teacher-lead activities with independent and collaborative learning. It attempts to make use of standard generic software available in the widest public domain. Whilst from the technical point of view the methodology does not use state-of-the-art language technology, it exploits advanced features of standard applications, such as the Word Processor, which are normally forgotten by or even unknown to many teachers and general users. It also provides almost virtual independence from technical assistance, thus providing the language teacher with almost total control of the whole learning environment. And because it uses applications available on the central University network, it does not imply any disbursement of departmental monies.

Several developmental stages were piloted between 1995 and 2001, but a systematic study of student use and performance was never carried out. This, for a variety of reasons, the immediate one being the continuous changes in technical specifications and administrative procedures for hardware and software purchase, access and support, which prevented the continuity of variables required to allow proper observation. There are other pedagogic, practical and even ethical reasons why I do not intend at present to measure the level of this hypothetical improvement: setting up a control group would imply excluding one of the three groups taught from a methodology which provides 'academic coherence' AND 'group identity' to all three groups. It would also deprive individual students from the control group the (hypothetical) extra chances of success derived from exposure, not just to the methodology, but to the added richness of the language experience offered within the overall integrated environment.

There was a later suggestion that a control group would emerge spontaneously by the expedience of some students not using the methodology outside the classroom, but it seemed flawed, because, typically, those students would be the least motivated and the sample would be biased as a result. Indeed, better students or those with higher aspirations and, to a lesser extent, weaker students with a fear (not necessarily well founded) of failing, were the ones who expressed greater willingness to try out the methodology.

II. EXTERNAL LEARNING CONSTRAINTS

First, it must be stressed that the IT provision available to Languages departments is not necessarily planned with Modern Languages in mind. Moreover, FL departments, at least in the UK, will usually find themselves carrying out a considerable amount of service teaching to other faculties and even at other campuses, each with its own IT specifications and access rules. In a financial environment where departments are cost centres, this translates often in students from serviced courses being denied access to departmental facilities. There is, however, one common denominator in IT provision, usually available on the institutional central network, the word processor. Hence, its use as the technical centrepiece of the methodology.

If we see these constrains against the backdrop of language syllabi which do not normally incorporate (or even promote) the use of IT, it will be understood that there must be an element of improvisation, of ingenuity and, in the actual logistics involved, even of 'picaresque'. The methodology cannot then be fully planned. It was initially more a question of making do, of teaching 'on the hoof'. If, as Belford (1991:161) says, there is no methodology without philosophy, but only method, the main claim to the appropriateness in using the word *methodology* lies on the philosophy of need. From the student point of view, there is a need to surmount language learning problems brought about by curricular changes, and also the real-life need to experience the new technologies. From the point of view of the lecturer, there was an immediate need to find a way to handle a group of students with a marked increase in their ability range and performance levels. Financial constraints and a general lack of IT support infrastructure meant adopting a minimalist approach to software, by making imaginative use of generic applications and recycling dedicated low-cost ones.

The new prominent role given to IT both in the classroom at Spanish translation classes in the UNN and outside it, although a natural progression from previous uses, responds primarily to a need to compensate for the reduced number of teaching weeks which semesterization has brought and for the, in some cases, absence of a formal Spanish placement in year 3. On this last point, Coleman's thorough survey of language students does not surprise us when we read of the "dramatic impact" which residence abroad has on them (Coleman 1996: 112). But even if "grammar gains are harder to find" than "oral-aural fluency, vocabulary and sociolinguistic competence" (op.cit. 58) — we have all visited the bars where this latter competence is acquired, they were always present. It was these grammar gains that the methodology tries to achieve.

III. THREE LEVELS OF HYPERACTIVITY IN INTEGRATION

To explain the multi-level approach to integration offered by this methodology we can look at the various meanings of the prefix 'hyper'. It was first used in 'hypertext' to designate inter and intra-textual connections integrating several documents into a single resource. Then it was transposed to hypermedia to indicate links between different media, not just between texts. In our context 'hyper' refers to the integration and cross-referencing intended between activities: classroom and laboratory, private study and language class, individual and collaborative effort, computer-centered and teacher-led. Figure 1 offers a schematic view of how this third level of integration between machine and teacher has developed in our methodology.

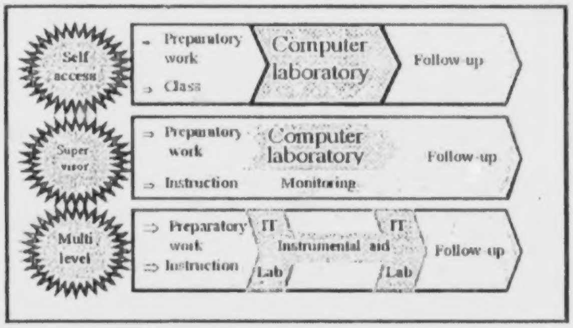
Self access
⇒ Preparatory work
⇒ Class
Computer laboratory
Follow-up
Super-visor
⇒ Preparatory work
⇒ Instruction
Computer laboratory
Monitoring
Follow-up
Multi level
⇒ Preparatory work
⇒ Instruction
IT Lab
Instrumental aid
IT Lab
Follow-up

Figure 1: *Three integration levels*

At the level of class dynamics, integration also means bringing back into the fold those students at the two ends of the ability spectrum who may find themselves disenfranchised. At one end, there are one-time beginners returning from a long placement in a non-Spanish speaking country, who may even need some basic remedial grammatical work; at the other end, students with "A" level entry and a full year in Spain, some of whom may aspire to a First Class degree classification. In addition, each cohort usually includes up to 20% of Erasmus students — some native speakers of Spanish — normally, with above average standards. This is witness to the fact that mixed ability teaching is creeping into the more advanced stages of undergraduate work.

IV. METHODOLOGY

A Spanish placement is no longer a certainty. Some students will spend a period in Spain only if they arrange it themselves during vacation time, but there is no academic provision comparable with the formal one. Some of these students were complete beginners on enrolment and after two years of intensive study, the period of Spanish residence was not enough to bring their average

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examination results on a par with students who had studied Spanish at school. Whilst fewer reached Upper Second, a small number found themselves worrying too much about the possibility of resits. Equally, post A level students with no Spanish placement were also suffering.

A complex course structure prevents splitting year groups into streams. Therefore, there was an obvious need to consider the development of a new methodology which would cater for mixed ability whilst preserving minimum standards at the same time as supporting excellence. These are the guiding principles:

- Prevent a feeling of alienation among the weaker students.
- Make students aware of their own abilities.
- Boost their confidence.
- Increase their expectations.
- Promote co-operation and mutual help.
- Encourage active class participation.
- Facilitate access and feedback.
- Enable excellence
- Maintain standards.
- Increase exposure to language: vocabulary, and grammatical structures.
- Sustain interest.

V. OVERVIEW OF THE METHODOLOGY

There is one main cycle or ring circuit, of an instructional / training nature. There are also in-built testing spurs to accommodate individually monitored work. IT is involved in the two processes, both at the beginning and at the end, and each translation is reviewed in class, also with the help of IT. Uncharacteristically in the use of CALL, the focal point of the methodology is a teacher-led class, rather than individual student work, supervised or not. But IT is also at the centre of the methodology, both in function and in time, for it provides a forum for discussing individual and collaborative work and it originates material for follow-up and revision work. This prominence contrasts with an earlier vision of methodologies which, typically motivated by the technological push, placed translation-aid applications in the focal position of IT-based teaching. *Figure 2* offers a flow chart of this instructional cycle:

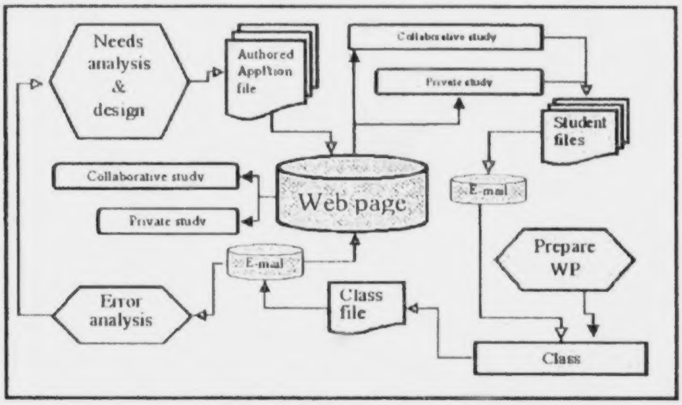

Figure 2: *The instructional cycle*

Translation files based on a previous needs analysis are prepared using any suitable application. This needs analysis stems partly from a joint study with Pascual Cantos, University of Murcia, on Spanish compositions by UNN students. The original idea was to create a non-native corpus of Spanish. The contents of the file are described later. The file is placed on the lecturer's web page and students access it either individually or in teams. The latter is encouraged. Students prepare translations prior to the class and e-mail their files to the lecturer prior to the class. During the class, student files are loaded to the word processor (Microsoft Word) and viewed with a LCD projector. Since the WP allows several files to be displayed at the same time, the same sentence from each student translation file (up to a maximum of four) can be viewed simultaneously. This is set up prior to the start of the class. The class itself can progress in a number of different ways, for the sake of variety and to foster alertness among students. The WP work is done by the lecturer.

- A new blank file is created and it grows as each student (or a small team of students) agrees on the best rendition, mostly — but not necessarily — taken from the student files on view.
- A new blank file is created from memory, after visual access to student files is denied following the reading of the sentence in hand.
- There is no new file created but student files themselves are edited.

Editing is done in a way which is explained later. After the class, files follow two paths:

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- They are studied by the lecturer for error and needs analysis
- They are placed on the web for private or joint use by students.

There is a second cycle which operates when students are given set-work for the purpose of individual monitoring. This takes place twice a semester, four times a year. It follows the same basic steps, except that students are returned their individually annotated — not corrected — files via e-mail. A 'Common Errors File' is prepared by the lecturer and placed on the web. Students correct their translation with reference to this file. The cycle is longer but there are usually between two and three weeks between the deadline to submit the translations and the correction class.

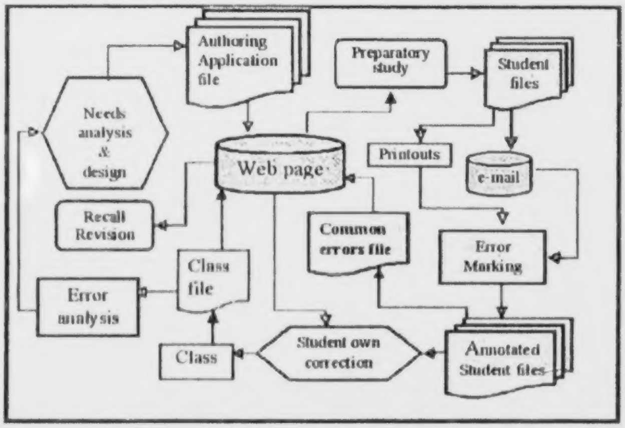
Authoring Application file
Preparatory study
Student files
Needs analysis & design
Web page
Printouts
e-mail
Recall Revision
Common errors file
Error Marking
Class file
Error analysis
Class
Student own correction
Annotated Student files

Figure 3: *The testing / monitoring cycle*

It is important to note that student files are annotated and marks awarded — but not disclosed. Disclosure takes place only after and only if corrections have been made. Students may collaborate when they prepare their translations as long as they present individual files.

The class revolves in this case around the students own corrected files. As with the instructional cycle, resulting files are placed back on the web for student revision. Files are also available for the lecturer's own error and needs analysis.

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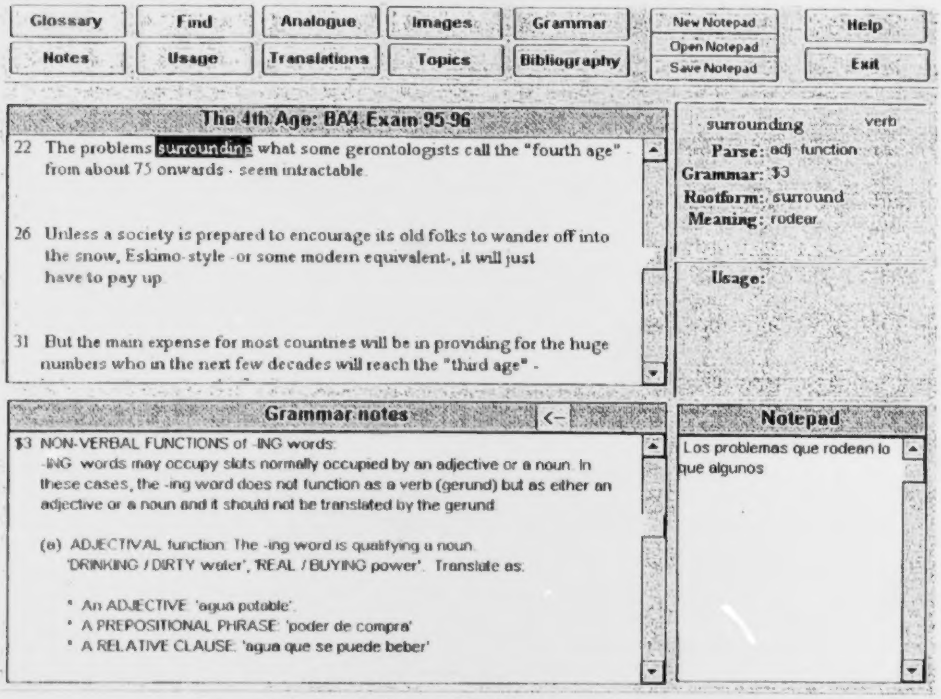
VI. THE AUTHORED SOURCE FILE

Originally meant to be the bricks and mortar of both ring circuit and spurs, *Poetry Shell* (OUP, 1992), an authoring package devised primarily to teach poetry, provided good functionality to create a series of self-contained packs, each with hypertext and hypermedia material based on an English text for translation into Spanish.

Poetry Shell was abandoned in 1998 because the university stopped offering official support for Assimetrics Toolbook, the application which runs *PoetryShell*. The shell allowed the creation of packs very similar in their conception to those provided later by TELL's *TransIt Tiger Authoring Shell*. Both offered an original source text, a model translation, a glossary and hints or notes, all in a hypertext environment. It lacked some of the advantages of power and user-friendliness (for both author and user) brought by later developments in IT, but it had the advantage of providing hyperlinks from the glossary to a grammar, the possibility of two or more contrasting translations, additional supporting texts (e.g. on background) and some multimedia (visual) support. Developed originally with Anglo-Saxon poetry in mind (hence the title), the shell was flexible enough to be adapted to the principles earlier in this article.

The *Poetry Shell* environment was later recreated using *AOL-press*, a web-authoring application provided by the Internet provider AOL. *AOL-press* is still functional but AOL does not support it any more. Today, the same type of environment is easily achieved using a standard word processor with the ability to convert .doc files to .html or any simple web-page design package. Either way, each translation pack is made available on the Internet within seconds of creation. The files with which translation packs are built are always WP (.doc) files and can, therefore be instantly converted and imported into any web-authoring package used, independently of the presentational format used.

Figures 4 to 9 offer screen-dumps and snapshots of various source files created with a variety of applications or shells.



The 4th Age: BA4 Exam 95-96

22 The problems surrounding what some gerontologists call the "fourth age" - from about 75 onwards - seem intractable.

26 Unless a society is prepared to encourage its old folks to wander off into the snow, Eskimo-style -or some modern equivalent-, it will just have to pay up.

31 But the main expense for most countries will be in providing for the huge numbers who in the next few decades will reach the "third age" -

surrounding verb
Parse: adj function
Grammar: $3
Rootform: surround
Meaning: rodear

Usage:

Grammar notes

$3 NON-VERBAL FUNCTIONS of -ING words:
-ING words may occupy slots normally occupied by an adjective or a noun. In these cases, the -ing word does not function as a verb (gerund) but as either an adjective or a noun and it should not be translated by the gerund.

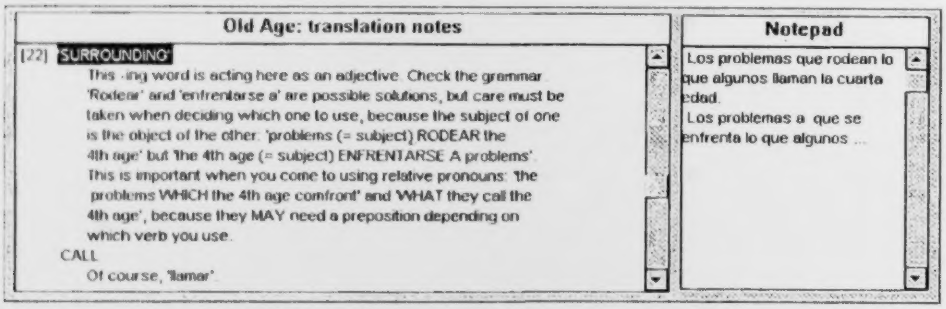
(a) ADJECTIVAL function: The -ing word is qualifying a noun.
'DRINKING / DIRTY water', 'REAL / BUYING power'. Translate as:

- An ADJECTIVE: 'agua potable'.
- A PREPOSITIONAL PHRASE: 'poder de compra'
- A RELATIVE CLAUSE: 'agua que se puede beber'

Notepad

Los problemas que rodean lo que algunos

Figure 4: *Poetry Shell pack: English text and Grammar notes*



Old Age: translation notes

[22] SURROUNDING'
This -ing word is acting here as an adjective. Check the grammar.
'Rodear' and 'enfrentarse a' are possible solutions, but care must be taken when deciding which one to use, because the subject of one is the object of the other: 'problems (= subject) RODEAR the 4th age' but 'the 4th age (= subject) ENFRENTARSE A problems'. This is important when you come to using relative pronouns: 'the problems WHICH the 4th age comfront' and 'WHAT they call the 4th age', because they MAY need a preposition depending on which verb you use.
CALL
Of course, 'llamar'.

Notepad

Los problemas que rodean lo que algunos llaman la cuarta edad.
Los problemas a que se enfrenta lo que algunos ...

Figure 5: *Poetry Shell pack: Translation notes and note pad*

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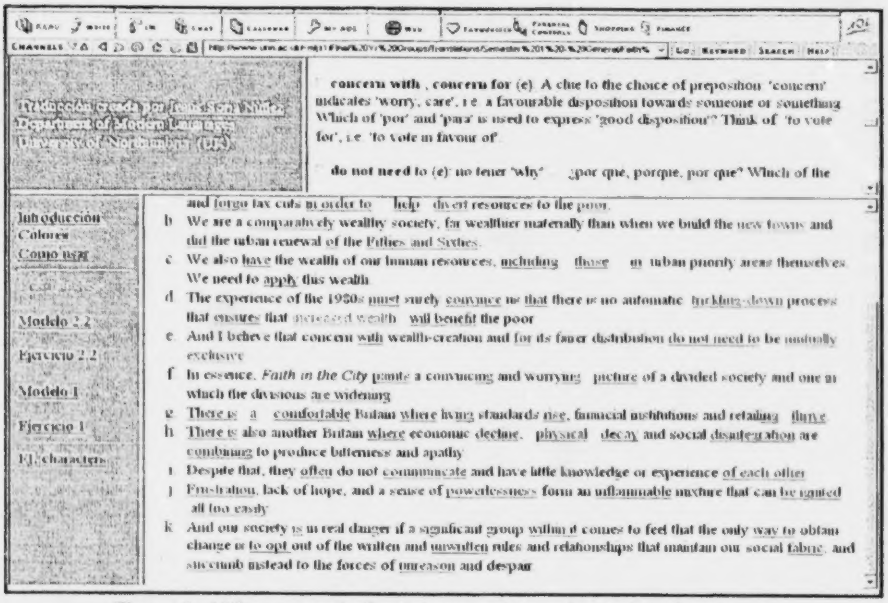
Read
Write
IM
Chat
Calendar
My AOL
Web
Favourites
Parental Controls
Shopping
Finance
Channels
Go
Keyword
Search
Help
Introducción
Colores
Como usar
Modelo 2.2
Ejercicio 2.2
Modelo 1
Ejercicio 1
FL characters

Traducción creada por Jesús Soria Núñez
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concern with , concern for (e). A clue to the choice of preposition 'concern' indicates 'worry, care', i.e. a favourable disposition towards someone or something. Which of 'por' and 'para' is used to express 'good disposition'? Think of 'to vote for', i.e. 'to vote in favour of'.

do not need to (e): no tener 'why' ¿por que, porque, por que? Which of the

and forgo tax cuts in order to help divert resources to the poor.

b We are a comparatively wealthy society, far wealthier materially than when we build the new towns and did the urban renewal of the Fifties and Sixties.

c We also have the wealth of our human resources, including those in urban priority areas themselves. We need to apply this wealth.

d The experience of the 1980s must surely convince us that there is no automatic trickling-down process that ensures that increased wealth will benefit the poor.

e And I believe that concern with wealth-creation and for its fairer distribution do not need to be mutually exclusive.

f In essence, *Faith in the City* paints a convincing and worrying picture of a divided society and one in which the divisions are widening.

g There is a comfortable Britain where living standards rise, financial institutions and retailing thrive.

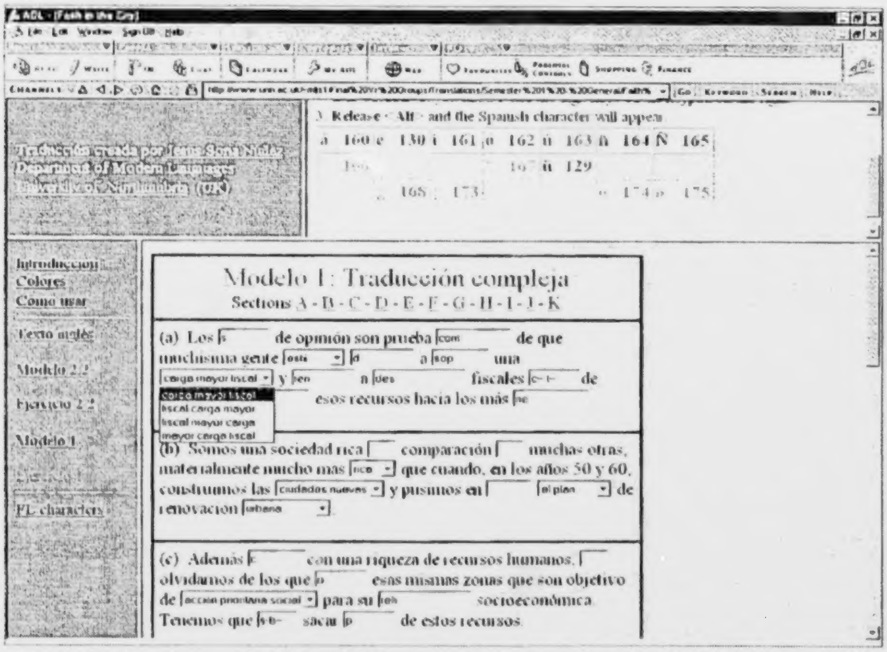
h There is also another Britain where economic decline, physical decay and social disintegration are combining to produce bitterness and apathy.

i Despite that, they often do not communicate and have little knowledge or experience of each other.

j Frustration, lack of hope, and a sense of powerlessness form an inflammable mixture that can be ignited all too easily.

k And our society is in real danger if a significant group within it comes to feel that the only way to obtain change is to opt out of the written and unwritten rules and relationships that maintain our social fabric, and succumb instead to the forces of unreason and despair.

Figure 6: *AOL-press pack: English text with hyperlink to translation notes*


AOL - [Faith in the City]
File
Edit
Window
Sign Off
Help
Read
Write
IM
Chat
Calendar
My AOL
Web
Favourites
Parental Controls
Shopping
Finance
Channels
Go
Keyword
Search
Help
Introducción
Colores
Como usar
Texto inglés
Modelo 2.2
Ejercicio 2.2
Modelo 1
FL characters
carga mayor fiscal
fiscal carga mayor
fiscal mayor carga
mayor carga fiscal

Traducción creada por Jesús Soria Núñez
Department of Modern Languages
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3 Release < Alt > and the Spanish character will appear

á 160 é 130 í 161 ó 162 ú 163 ñ 164 Ñ 165

Modelo 1: Traducción compleja

Sections A - B - C - D - E - F - G - H - I - J - K

(a) Los s de opinión son prueba com de que muchísima gente está a sop una carga mayor fiscal y ren n ues fiscales c de esos recursos hacia los más ne

(b) Somos una sociedad rica comparación muchas otras, materialmente mucho más rica que cuando, en los años 50 y 60, construimos las ciudades nuevas y pusimos en el plan de renovación urbana.

(c) Además con una riqueza de recursos humanos, olvidamos de los que b esas mismas zonas que son objetivo de acción prioritaria social para su reh socioeconómica. Tenemos que sacar p de estos recursos.

Figure 7: *AOL-press pack: Gap translation exercise (advanced model) and Spanish characters help file*

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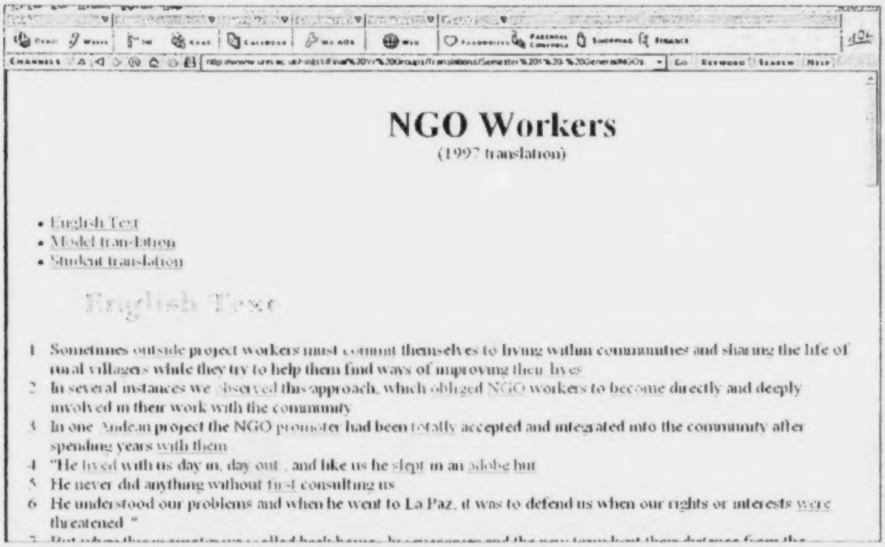


NGO Workers

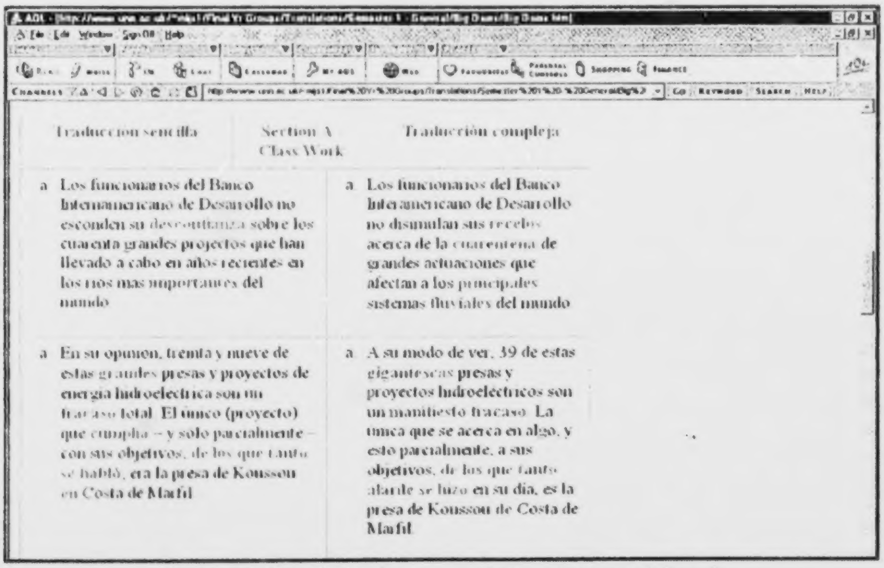
(1997 translation)

- English Text
- Model translation
- Student translation

English Text

1 Sometimes outside project workers must commit themselves to living within communities and sharing the life of rural villagers while they try to help them find ways of improving their lives
2 In several instances we observed this approach, which obliged NGO workers to become directly and deeply involved in their work with the community
3 In one Andean project the NGO promoter had been totally accepted and integrated into the community after spending years with them
4 "He lived with us day in, day out , and like us he slept in an adobe hut
5 He never did anything without first consulting us
6 He understood our problems and when he went to La Paz, it was to defend us when our rights or interests were threatened "

Figure 8: *MS Word pack: English text showing links to other areas of the file*



Section A
Class Work

Traduccion sencilla	Traducción compleja
a Los funcionarios del Banco Interamericano de Desarrollo no esconden su desconfianza sobre los cuarenta grandes projectos que han llevado a cabo en años recientes en los ríos más importantes del mundo	a Los funcionarios del Banco Interamericano de Desarrollo no disimulan sus recelos acerca de la cuarentena de grandes actuaciones que afectan a los principales sistemas fluviales del mundo
a En su opinion, treinta y nueve de estas grandes presas y proyectos de energía hidroeléctrica son un fracaso total. El único (proyecto) que cumplía – y sólo parcialmente – con sus objetivos, de los que tanto se habló, era la presa de Koussou en Costa de Marfil	a A su modo de ver, 39 de estas gigantescas presas y proyectos hidroeléctricos son un manifiesto fracaso. La única que se acerca en algo, y esto parcialmente, a sus objetivos, de los que tanto alarde se hizo en su día, es la presa de Koussou de Costa de Marfil

Figure 9: *MS pack showing two model translations side by side*

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Presentational formats are dictated partly by the application used to generate the source file and partly by the need to produce packs in the shortest possible time. But they all share the same pedagogical principles and roughly the same types of files.

The components of the source translation pack are the following:

- English text with hyperlinks to glossary, translation, grammar, cultural and historical notes. The glossary is selective.
- Glossary, grammar and translation, cultural and historical notes.
- Two separated model Spanish translations ('survival' and 'ambitious') hyperlinks to explanations, alternatives or tactical approach.
- One gapped translation practice file for each model Spanish translation.
- Other ancillary files or sections such as instructions or FL character help.

VI.1. *Shell* Authoring Packages

Users of packages such as Poetry Shell or any of the recreations mentioned above approach shell authoring differently, especially in what concerns the degree of targeting included in the glossary and other help files. Holmes (1997), for instance, considers that students should make the effort to jump from a general meaning to a more specific one fitting the context, so that they "learn not to trust the definitions" provided. My own view differs from this, but I do not propose to discuss it here beyond saying that the packs described in this article provide both the information required to learn and the opportunity to do the translation without reference to the notes. How much help is included, whether specific, generic or in clue form is a matter of judgement which can only be exercised by the teacher. Of course, the teacher must be the author of such a package for it makes little sense to create it without prior knowledge of the specific needs and aspirations of students, their deficiencies and abilities. This is why the teacher occupies centre stage in this methodology while technology is only instrumental in its delivery.

Other observers also comment on positive aspects of such packages as well as being aware of basically the same problems. Thus, Beedham (1995: 2,3) reports on students (especially the more advanced ones) approaching *The Dream of the Rood (Poetry Shell)* with fun-derived enthusiasm whilst Holmes (1997) refers to *Transit Tigers*'s potential for Swedish with mixed ability groups and Small (1997: 5), to its suitability for post-beginners use. Among my own students, the better ones (whether in attitude or performance) were also in a majority among those willing to use the package.

On the other hand, the same authors highlight the dangers which the unusual amount of help offered by these 'rich environments' can bring, among them laziness (Beedham, ibid.) and

"IT-fatigue" (Holmes, ibid.). The former problem, a misconception in my opinion, is echoed by some of my own students, who expressed guilt-like feelings at such an array of helpful material (*'it's a bit like cheating'*), whilst Goodfellow (1997) gives us a cautionary tale on the latter point: "the more autonomous students become (…) the less likely they are to make use of CALL, [and] the development of familiarity and skills using general-purpose IT applications [such as word-processing] (…) produces resistance to activities which do not exercise those skills."

My own view concerning 'rich environments' is not that they provide 'too much help' but 'all the elements they need to succeed'. For those who feel somewhat uneasy about a sufficient lack of effort let's use athletes preparing themselves for the Olympics as a metaphor. There is a lot of sustained hard work put into routine training, but athletes do not test their real potential during training, only at a few number of meetings. The measure of their confidence before the ultimate test is the overall feeling of the good condition and sustained improvement achieved during training.

Moreover, it is not as if students have it easy with the type of pack described here. There are two basic strategies inbuilt in the translation process offered to students, both within the framework of grammatical accuracy. Each one of them informs one the 'model' translations offered. 'Model' here is not intended to mean 'modelic' but 'imitable'. These 'model' translations are not created to be masterpieces of translation work but to offer specific solutions to specific problems. They are not dogmatic but illustrate, alongside other help files, strategies to be followed. Students are encouraged to study and imitate solutions offered in either or both of them. The strategies are:

- Error-avoidance
- Experimentation and creativity

The error avoidance strategy lies behind the 'survival' model. This model attempts to create solutions based on students existing ability by tapping their passive knowledge of the language and, whenever possible, their ability to 'reason' solutions. On a psychological level, it attempts to give confidence in their ability to those students who may lack in it.

The 'experimentation and creativity' strategy is the mainstay of the 'ambitious' model. This model is based on the simple principle that if a student knows how to translate something is not going to learn anything by doing it in the way he or she knows. It offers, therefore, alternative solutions, even if they are not going to be the preferred ones by the lecturer. It aims at giving students extra exposure to language which they may not encounter otherwise other than in a passive context.

Beedham's experience (1995: 3) is that students' relative performance against each other was not affected: students performed according to the lecturer's expectations — not a bad thing if each student's performance and, hence, the group's as a whole, is improved.

VII. IN-CLASS EDITING WITH *MS WORD*

The idea of using generic applications as general teaching aids is not new. This is not surprising because, having a wider market, they tend to incorporate more sophisticated features than dedicated teaching ones. It is perfectly possible, for instance, to use databases for language work (not just for data handling or retrieving). This has been done earlier — in my case with the old dBase range. Powerpoint is used extensively in certain UNN Spanish courses and even spreadsheets lend themselves to language teaching purposes to the extent to which they can handle characters. All this has been especially possible since the development of suits of applications, such as Microsoft Office.

However, students require special training in their use, which is often unavailable to mainstream language degree students, and unaffordable, in time if anything else, to languages departments. Students and colleagues react with scepticism and even open antagonism to the idea of using applications which are 'alien' to language studies. However, students from 'serviced courses', typically from business-related degrees who already come with a knowledge of these non-language-based applications, are able to approach them with a more open mind.

As for word-processing, its use has also been limited in language teaching in spite of the obvious appeal that it should have had. The fact that language teachers have used it mainly for inputting text (and this includes creative writing) has prevented us from exploring its actual potential for processing the written word much beyond cutting and pasting or increasing the text's presentational appeal. Whilst Groundwater-Smith (1993: 11) highlights how editing can go beyond "merely attending to surface structures (…) and lead to accumulated re-conceptualising of the written piece", Felix & Lawson (1996: 13) report on the increasing use and positive outcomes of word-processing for language teaching mostly in EFL projects. However, we are still dealing mainly, if not exclusively, with the writing process, as D. Wolff (1993: 23) demonstrates when he speaks of his conviction "that the word processor is a valuable tool and help facility in language learning", for if refers to procedural matters.

This is a very worthy use but one that, in exclusivity, does not do full justice to an application dedicated to the processing of text, as I shall try to demonstrate shortly.

This underuse of the word-processor may be due to two factors:

- The presence of 'competing' dedicated applications, perceived as the natural SLA tools provided by IT, i.e. CALL — which brings back to mind Goodfellow's earlier reference to the inverse relationship between CALL and standard applications as far as student appeal is concerned.

- Our failure to react to T. Wolfe's general assertion, as early as 1968 (see Curtis 1993: 98), that "the new technologies (…) have become a new environment (…) that radically alters the entire way people use their five senses". Monteith (1993: 1) has applied this to language: "microcomputers bring with them the possibility of pedagogical reform as commonplace practices change to accommodate them."

Word processing is very useful to put into practice Felix and Lawson's (1997: 13) advice that "teaching approaches which focus on linguistic features and structure simultaneously rather than separately will lead to more satisfactory writing" — or, as I would argue, translating.

Word processors are applications incorporating a vast array of extremely sophisticated functions. Some are explicitly word-processing ones but there are many more which, usually discarded aprioristically as purely cosmetic or extraneous to language, offer nevertheless the transparency which D. Wolff (1993: 27) claims is necessary during the learning process for students to acquire declarative and procedural knowledge. It can be argued that this transparency helps in the context in which "the development of proficiency in a second language depends on the automatization of processes that are first mastered by conscious effort." (Little 1997). *Figure 10* shows a selection of editing possibilities as carried out on an actual student file in a typical translation class.

VII.1. Presentation of English Text

First, the English text is presented with a variety of highlights which alert students to a number of points, in order to avoid errors or to practise alternative structures. The purpose is, as stated earlier, to focus their attention onto specific language issues, initiate a rational process and possibilitate success with a maximum avoidance of errors. Colours are based on traffic lights as a standard metaphor for behaviour. Of course, the decision to allocate colours is made by the teacher, who bases it on an intimate knowledge of students derived from previous error analysis. Students themselves have become acquainted with the difficulties or suggestions to which they are alerted in two ways: using the translation pack before the class takes place and through normal class interaction during the semester.

- YELLOW indicates general alertness and points at concomitant changes, typically gender / number agreement and verb tense sequencing, among others. In our example, it also alerts students to the common issue of translating making English 'people' agree with singular or plural words ('people say' versus 'la gente dice'). The colour also helps maintain the attention on the issue for as long as there are references to 'people'.

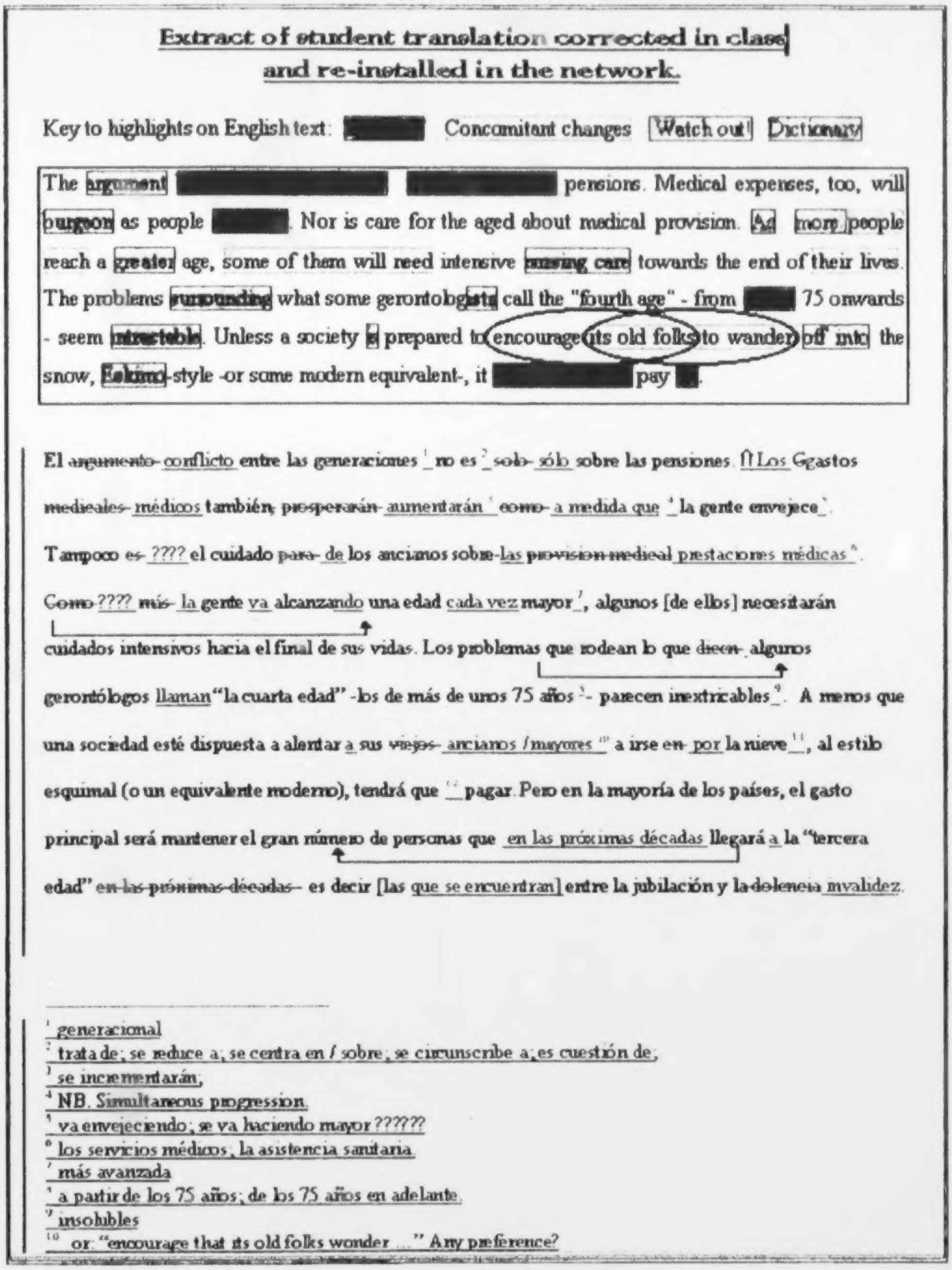
- INTERSECTING OVALS over concomitant changes suggest that the doubly-enclosed phrase could function in two or more ways. In our example, should 'its old folk' be treated as the object of 'encourage' or as the 'subject' of 'to wander'?
- GREEN indicates freedom of movement and points at the possibility of putting into practice certain strategies or trying out alternative structures. It alerts students, for instance, to the different possible renditions of adjectival phrases (En. 'between the generations' versus Sp. 'intergeneracional'), or to verbs of becoming (En. 'get older' v. Sp 'se hacen viejos' or 'envejecen'). An alternative for En. preposition 'about' could be the Sp. adjective 'unos'
- RED-MAGENTA is used to warn of danger: stop before you rush into translating. It alerts students to their most common grammatical and lexical errors. Thus students should think twice before translating En. 'argument' as Sp 'argumento'; the structure 'AS COMPARATIVE ... COMPARATIVE' deserves special attention: Sp. 'como' may not be the correct translation for En. 'as'.
- Finally, BLUE-CYAN, lying outside the traffic lights metaphor, tells students that they are not expected to know words highlighted in that colour, suggesting them to consult a dictionary or even a native speaker — there is no point in getting it wrong just out of sheer ignorance. Thus, while 'Eskimo' and 'intractable' would normally require dictionary help, 'burgeon' requires help beyond the dictionary, for the dictionary suggestion of 'prosper' clashes semantically with the 'unwelcome increased expenditure' derived from the context; similarly with 'nursing care' the dictionary could lead to tautologies like 'cuidado cuidadoso' or unlikely dead-ends like 'atención con cuidado'.

VII.2. Editing of Student File

Actual translation work is done in class in one of two ways, as the instructional cycle mentioned above explains, by editing either a brand new file created in class or student files submitted via e-mail and preloaded to the WP. In both cases the editing process takes place as students offer their translations or comments. The idea is to record on the resulting .doc file as much as possible of what is transacted in the class. This real-time editing requires from the teacher a high level of proficiency in the use of the WP.

VII.3. Teacher Expertise in IT

The WP provides several predefinable ways of correcting and annotating text.



Extract of student translation corrected in class
and re-installed in the network.

Key to highlights on English text: ■ Concomitant changes Watch out! Dictionary

The argument [illegible] [illegible] pensions. Medical expenses, too, will burgeon as people [illegible]. Nor is care for the aged about medical provision. As more people reach a greater age, some of them will need intensive nursing care towards the end of their lives. The problems surrounding what some gerontologists call the "fourth age" - from [illegible] 75 onwards - seem intractable. Unless a society is prepared to encourage its old folks to wander off into the snow, Eskimo-style -or some modern equivalent-, it [illegible] pay [illegible].

El ~~argumento-~~ conflicto entre las generaciones [1] no es [2] ~~solo-~~ sólo sobre las pensiones. ⇑Los Ggastos ~~medicales-~~ médicos también, ~~prosperarán-~~ aumentarán [3] ~~como-~~ a medida que [4] la gente envejece [5].

Tampoco ~~es-~~ ???? el cuidado ~~para-~~ de los ancianos sobre-las ~~provision medical~~ prestaciones médicas [6].

~~Como~~ ???? ~~más-~~ la gente va alcanzando una edad cada vez mayor [7], algunos [de ellos] necesitarán cuidados intensivos hacia el final de sus vidas. Los problemas que rodean lo que ~~dicen-~~ algunos gerontólogos llaman "la cuarta edad" -los de más de unos 75 años [8]- parecen inextricables [9]. A menos que una sociedad esté dispuesta a alentar a sus ~~viejos-~~ ancianos /mayores [10] a irse ~~en-~~ por la nieve [11], al estilo esquimal (o un equivalente moderno), tendrá que [12] pagar. Pero en la mayoría de los países, el gasto principal será mantener el gran número de personas que en las próximas décadas llegará a la "tercera edad" ~~en las próximas décadas~~ – es decir [las que se encuentran] entre la jubilación y la ~~dolencia~~ invalidez.

---

[1] generacional
[2] trata de; se reduce a; se centra en / sobre; se circunscribe a; es cuestión de;
[3] se incrementarán;
[4] NB. Simultaneous progression.
[5] va envejeciendo; se va haciendo mayor ??????
[6] los servicios médicos; la asistencia sanitaria.
[7] más avanzada
[8] a partir de los 75 años; de los 75 años en adelante.
[9] insolubles
[10] or: "encourage that its old folks wonder ..." Any preference?

Figure 10: *In-class edited student file*

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The 'track changes' function provides a very efficient way of making fast and clear changes to the original text and is a favourite in this methodology. The function can be tailored so that characters acquire new text features to signify various things. Thus, replaced text, i.e. wrong translation, rather than being deleted, can be turned pale grey, crossed-out and given a pitch slightly smaller than the original. This would not interfere with the readability of the whole text.

Replacing text, i.e. corrections, is set to bold dark magenta, not too different from the original font, thus making it stand out while affording readability.

Once these settings are in place and for as long no one else tampers with them, the editing happens automatically as you type. The sample provided in figure

Alternative renditions can be graded by using smaller font sizes. Explanations may be added as footnotes and connections between words by means of hyperlinks and bookmarks. For this to work efficiently in the classroom, 'shortcuts' (usually pre-defined key combinations with <Ctrl>, <Alt> or both) must be second nature to the teacher, since they allow instant editing. There are many shortcuts that allow the teacher to move instantaneously from any part of the text to another or to highlight in many ways any amount of text, decrease or increase font size, lengthen, shorten or switch the highlight, etc.

In addition, macros provide immense extra functionality. A macro is a mini-program that performs a very specific task. It can be created without knowing any programming languages by just going once through the steps required for that task to be performed. The functionality of macros comes to its own in the classroom when they are assigned a key combination which has not been prealocated as a 'shortcut' for any predefined function. The combination <Ctrl S> for instance is the shortcut for 'Save', i.e. it saves you from going through the menus, and is predefined. But the combination <Alt R8>, for instance, may be assigned to turn words to font size 8 in red. It would take under a second to do it.

The 'Autocorrection' function can equally be tailored to introduce automatically special characters such as arrows, without having to go through all the menus. For instance the arrow à has been created here by typing - - > without gaps.

As well as editing text, the teacher can, if circumstances suggest it, add a number of symbols so that the class may focus their attention onto something which was dealt with before or needs to be taken into account before attempting a translation. Blue arrows indicate suggested word order changes and can be inserted by way of a macro.

The ability to hide text (without deleting it) and make it re-emerge is especially useful to isolate the components of a main clause from embedded and other clauses, for instance, and, vice versa, to identify those embedded clauses, or any other components of whatever length, however truncated and wherever located within the sentence.

VIII. FINDINGS

The experience of this methodology is not uniform across the years, but varies according to many variables outside the teacher's control, e.g. missing cable, projector not being delivered to the classroom in time, students not adhering to standards on submission of files. But on the whole, as long as the teacher has control over the PC, laptop (preferably) or desktop, classroom practice is as consistent as in any other situation that does not rely on IT. The most consistent findings are these:

- Improved attention and concentration. Students' responses include reasons like:
  - The overall novelty of the methodology; because they did not have any previous experience of this, they did not have expectations and, therefore, they did not know exactly what was likely to happen next.
    - A feeling of receiving special treatment: they are doing something which is more exciting than in other classes.
    - The brightness of the screen and the colours.
    - The movements of cursor and highlights catches their eye and their attention.
    - They do not have to do it; the teacher does it!
- Makes grammatical points much more transparent and clear (see D. Wolff, earlier).
- The almost total absence of clutter typical of standard OHPs (Felix & Lawson: 1993: 13), let alone white or black boards, provides an improved general sense of order and organisation. This works promotes the students' impression that the teacher knows what he or she is doing and, in turn, boosts their confidence in the overall process.
- It feels more like editing than correcting: "*you don't feel as awful even if your translation is heavily edited*". It is important to add here that, although the overall strategy was intended to lessen student's overall anxiety, this was an unexpected comment in as much as it referred to a correcting process, which tends to increase tension (Bartram & Walton 1991: 26-27 and Coleman 1996: 131). This reduction in anxiety may be attributed to one or more of the following factors:
  - Verbal activity is distributed almost equally among correcting errors, finding alternatives (e.g. synonyms or structural transformations based on alternative parts of speech) and expanding on lexical, syntactical or pragmatic points.

- Although clear distinction is made between genuine errors and second-best alternatives, on-screen activity does not enhance any of them over the others.
- In spite of the permanence of the edited-out original words in the final text, the colour scheme and the editing functions make this final version read quite easily as continuous prose, and both errors and discarded alternatives fade equally into the background. (The sample offered in Figure 10 does not illustrate well this point).
- Finally, students may concentrate more on screen activity, i.e. language work, than on the intervening persons, i.e. the teacher or the student whose extract is being corrected).

Up to here, students comments with which I am compelled to agree. It is possible to add, however, the following ones:

- My own impression that, at least class performance, is better than before, in spite of the absence of thorough quantitative data.
- The permanence which the final files provide has interesting outcomes and it has also prompted considerations which were not contemplated at the outset:
- This permanence works both in time and place, for nothing has to be rubbed off and, therefore, everything is available at a key-stroke, even if it is not visible at that time.
- Additionally, at the end of the semester or academic year there is a full record, accessible to everyone, not only of each individual class, but also of the whole semester, year, etc.
- This provides the teacher with an invaluable resource for re-examining student needs and for assessing and controlling the linguistic exposure which the collection of texts provides at any given time. An obvious development was to use concordancers such as OCP (OUP) or TACT (University of Toronto) to carry out a more detailed analysis. Both were used for a variety of specific purposes.
- As for students, they are likely to feel more valued as their own comments or alternatives are included in the file. Weaker students may glow with self-esteem when they have been given the opportunity to make a relevant comment, even if it was not particularly inspiring, and it has ended up in the final file.

Finally, and most importantly, there seems to be a perfect marriage of human and machine roles.

- This enhances the value of IT in students' eyes, for it does not work against their "majority feeling that the teacher or the class is essential for improvement" and that the classroom "is the key framework for their language learning" (Broady 1997).
- It helps to dispel the cult-like mystique which dominates the way some people approach IT. Curtis (1993: 99-100) explains Ihde's argument that the definition of boundaries between

human and machine roles runs along a continuum with transparency and opacity at its ends: "the more the machine functions in the role of bodily extension [a pen, a garden fork], the more it is transparent", and he places the computer at the opacity end: "it is perceived as separate, with its own identity". The teacher's use of the computer visibly as an instrument to highlight or complement verbal activity enhances the role of the teacher instead of diminishing it.

There may be, however, a few shortcomings whose real importance is difficult to assess:

- Loss of eye-contact was initially the most disappointing one by far. However, as familiarity with editing procedures improved, it stopped being a problem, in much the same way as it is perfectly possible for competent readers to lift their eyes from the page without stopping the flow, or for good typists to type without looking at the keyboard.
- The amount of text covered in class was also reduced at the start. Again, this improved considerably with time levels of coverage were soon reached equal to those in previous years. This was not a real worry anyway, for texts are chosen for the specific problems they illustrate (the result of previous error-analysis) and these problems are reviewed in more than one text. And, in any case, one of the functions of the source files is precisely to provide this cover in the form of self study after the class.
- The fact that the methodology was being developed practically in front of the students' very eyes, added on occasions a degree of inconsistency and even incompetence, which made me more uneasy than the students.
- And finally, the expected and ubiquitous problems which we encounter with IT in general and which are due, almost always, to our own deficiencies in IT skills, both in hardware and software terms. However, this should not just detract us from experimenting with IT; quite the opposite, it should imprint in our minds the need to come to terms with technology and either train ourselves or demand training support to develop these skills.

IX. INDIVIDUAL MONITORING: ANNOTATING, MARKING AND CORRECTING

Language learning is a highly individualised process (Wolff 1993: 12) and, as such, it requires individualised monitoring, if only because students tend to perceive correction and individual feedback as a yard stick for measuring the teacher's commitment. Also, falling short of their expectations leads to some anxiety (Bartram & Walton 1991: 27). Additionally, in spite of all the gains derived from collaborative work, "collective meaning-making is inconsistent with the processes of assessment and credentialing", (Groundwater-Smith 1993: 12) which are, essentially, individual.

As explained earlier, handed-in work is annotated but not corrected. A comprehensive mark-up code is used to direct students' attention to the nature of their mistakes so that they are able to correct them by themselves. This is a time-consuming process also favoured by others (e.g. Bartram & Walton 1991: 84) but, as Felix & Lawson (1996: 13) say, it runs the risk of being ineffective because many students are more interested in the mark awarded than in the benefits which may be derived from written comments, no matter how individual or well targeted they are. Awareness of this is precisely the reason why annotated translations are returned without a mark. Marks are withdrawn and only disclosed to those students who bring their corrected work to the appropriate seminar. Moreover, the withheld mark is not final; instead, any student who hands in the amended version is given an upgraded mark. This new version must incorporate corrections in bold in order to facilitate the teacher's task.

Although these exercises are not formally assessed, students overall find the process encouraging because

- The increased mark is perceived as a record of their improved performance and effort in the teacher's own mind and appreciation, and
- They see the benefits of actually going over their own mistakes.

This second aspect, however, is not as obvious to them as it may be to the teacher. The culture of task-based learning has a lot to answer for in this respect, for many students act as if the learning process is circumscribed to the production of objects with a physical entity (be they ink-stained papers or sound waves) within a statutory amount of time (a 50 minute class or a two hour translation at home). In this respect, it is surprising that a significant proportion of students are prepared to forgo even a mark for the convenience of not correcting their own work. Nevertheless, those who follow the suggested process agree on the benefits derived from it. This is echoed by Bartram & Walton (1991: 95-97) when they speak of the positive effect of 're-visiting' against 'remedial' strategies when correcting work. And Fitzpatrick & Underwood (1997: 13), although not referring to language learning specifically but to CAI in general, speak of the need "for incentives, for 'good' exemplar material" and of the need "to show benefits to learners [and] to start from where the tutor is".

X. CONCLUSION

IT does not have to instil fear or boredom among students. It can provide not just an alternative learning environment to the standard class, but it may be brought right into the classroom itself, in direct support of the teacher's direct activity. We have seen this with reference to dedicated language learning shells like *Poetry Shell*, and also to generic applications like the standard word-processor.

Thus, IT can help to bring together the two partners in learning:

- The teacher who does not want to relinquish neither control over the teaching process nor human contact with students and
- The students who, in the context which has been presented here, are specially motivated to do better, and keener to receive the added value of computer literacy within their HE experience.

It can also function in two different roles,

- As a complement somewhat detached from the teacher both in time and space, and
- As integral and immediate tool to enhance classroom activity.

Once again, I would like to refer to D. Wolff's comments on CALL vis à vis generic applications in support of the expansion of the use of the latter in LSA.

Finally, whilst the effectiveness of CALL in its various forms has been challenged at different times from pedagogical, logistic and skill-transfer points of view, word-processors, present themselves above these criticisms. Their effectiveness in language work, especially class-editing, may rely heavily on the teacher's enhanced word-processing skills, but this provides a good argument for the transferability of general computer literacy.

If this helps to promote IT among our own students, there are other features waiting to be exploited, for instance, the use of annotations in collaborative work, in the sense in which 'annotations' are used in word-processing.

NOTES

1. A first approach to this methodology was presented to the CILT research forum at Cambridge University in January 1998. See http://www.linguanet.org.uk/research/resfor2/soria.htm. It was later developed through various papers and presentations at CALICO conferences and the late CTI-Modern Languages at Hull University.

2. The methodology was in place at the time of the last round of inspection of Languages departments by HEFCE, the regulatory and financing British Government agency for English Universities, after which the department was awarded the highest grade for teaching quality among English universities.

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OE CAI: Computer-assisted Instruction of Old English

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ABSTRACT

This article offers a general but thorough survey of Computer Assisted Instruction as applied to the Old English language from the work of the late 80's pioneers to December 2001. It embraces all the different facets of the question: stand-alone and web-based applications, Internet sites, CD-ROMs, grammars, dictionaries, general courses, reading software, extra-linguistic material, exercises, handouts, audio files... Each instruction item —whether it be a website, a java exercise, an online course or an electronic book— is reviewed and URLs are provided in footnotes. These reviews are accompanied all throughout by the pertinent theoretical background and practical advice.

KEYWORDS:

Old English, Anglo-Saxon, English Historical Linguistics, History of English, Manuscripts, Reading, Writing, Speaking, Listening, Grammar, Dictionaries, Computers, CALL (Computer Assisted Language Learning), CAI (Computer Assisted Instruction), Software, Internet, Browsers, Navigator, Internet Explorer, Microsoft, Java, Hypertext, Hypermedia, Electronic Books, Electronic Editions

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> The discipline of English as a whole (and certainly the world outside our racket) always seems vaguely bemused by the affinity medievalists have for high-tech. When a server is down or a print queue doesn't respond, your chances are usually better —if not by much— when you call on the Anglo-Saxonist in your department (rather than, say, the poststructuralist) to take it in hand. McNellis (2000)

I. INTRODUCTION

Computer-assisted language learning (CALL) and computer-assisted instruction (CAI) are normally associated with modern living languages. However, the learning of ancient languages, such as Old English (OE), may be equally enhanced through the use of computer technology. It would seem that little use would be made of computer technology in such traditional and long-established subjects as OE and History of the English Language (HEL). But, indeed, there now exists a considerable number of software applications, both Internet-based and stand-alone, devised for students enrolled in an OE or an HEL course. Naturally, learning a dead language is quite different from learning a living one, albeit not wholly. We shall first deal with the differences.

In the first place, the reasons why a student engages in studying Present-Day English (PDE) or OE are obviously different. One learns English in order to be able to exchange information through reading, writing, listening and speaking, either for personal pleasure or, more likely, for educational and employment prospects. Students of OE, on the other hand, will never need to converse or write in OE to obtain information and they will seldom have to do any listening[1]. Reading would be the top or only priority and the reasons for reading OE are exclusively scholarly: literary criticism, religion, philosophy, history, anthropology, sociology, historical linguistics… OE syntax, to give just one example, is not studied in order to be able write well, but rather to equip oneself with a sound basis on which to carry out research, say, on religion in Anglo-Saxon times, or write a thesis on syntactic change, on concessive clauses, on rhetorical devices, or write a descriptive grammar of OE prose in Ælfric. OE is therefore studied and taught at universities, especially in the final years or at a postgraduate level, and only a very small number of students and scholars are involved. On the other hand, PDE learning and teaching is universal.

This has immediate consequences on the amount of financial support for OE computer-assisted instruction and on the organizations providing it. While English as a Foreign Language (EFL) is a multi-million industry whose computer courses may be found on the shelves of any large store, —for they are commercial commodities, just like best-sellers, music CDs, or cameras—, software for OE, on the other hand, is often the personal endeavour of a determined lecturer with some knowledge of computing who wants to help his students more than is customary. Naturally, it is normally a non-profit enterprise, which obviously does not appeal to commercial publishers and little investment, whether from public or private universities, can be expected for the implementation of an expensive product with a small potential market. This, again, has an important bearing on the very nature of the software developed. While EFL computer programmes are very often attractive multimedia state-of-the-art applications, OE software lags far behind in this respect. We cannot expect OE lecturers to be experts in OE and expert programmers at the same time, to produce top-quality material. As Kitao (1995) says, it is a fact that "making computer materials requires a knowledge of developing [...] teaching materials and also of computer programming", and that "CAI materials are more complicated than textbooks, so it is difficult to make good ones". This brief depiction, of course, does not do justice to some outstanding Internet sites nor to some very recent excellent editorial projects on CD-ROM, which I will review to further down.

As for the actual practice of teaching the OE language seems largely, we can only say that by and large it seems unaffected by new technologies. Although we all use our computers to write and file our class-material, it is very seldom that we find lecturers actually using computers in their OE classes. According to Davis (2000:7), the computer had influenced his research and administrative career at university "beyond belief and recognition", but had had "no effect whatsoever" upon his teaching, until he started using an net-connected laptop and a TV monitor, and a completely new and much more efficient way of teaching was unfolded to him. It seems contradictory that most lecturers are no longer computer-illiterate but still feel reluctant to employ computers in their teaching practice. The problem is that many lecturers "are not comfortable with high technology" and often "only manage to recommend to their students CD-ROMs or Internet sites which are relevant to the syllabus, not having enough time to properly integrate CALL into their regular teaching, or help learners individually by providing activities in self-access mode" (Jones, 2000:365-366).

However, when it comes to research, the picture is different. As Wilcox (1998) puts it, "although they study the past, [OE scholars and Anglo-Saxonists] have not been shy of embracing new technologies", and he goes on to mention the ANSAXNET, the Beowulf Project, the TOEDC, various hypertext editions of OE poems. In this chapter we shall dwell upon many other instances of computer technology for OE.

II. APPLICATIONS OR WEBSITES?

It is a long time since computers were unconnected to a net and CALL software had to be installed and operated on one's computer. Yet, this is the picture that first comes to many teachers' minds when they hear the word *CALL*. But nowadays, not only can language instruction be carried out online and the software operated from a server, but the language applications may be installed on our computer while still requiring many excursions to the Internet for it to be implemented. The scope of CAI has increased enormously with the advent and popularisation of the Internet[2], so much so in fact that CAI can only be defined if the new medium is taken into account too.

In our opinion, CAI should be viewed as the inevitable combination of Internet applications and authoring tools[3], which means that a computer-assisted instruction project will contain many diverse elements which need not have been authored by the same person. What is more, it cannot. As Jones (2000:361) says: "Plainly, a new era in CALL has begun. The early, unimpressive phase of 'drill and kill' has passed. The fast improvement in technology, the advent of the CD-ROM, and especially that of the Internet, have enhanced the creative learning opportunities of the medium." As Ball (1996:17) said: "While gopher, telnet and FTP (traditional Internet tools) could properly be considered "computing" in 1994, the Web has transformed the Internet into a vast public library of text, images, sound, software and other electronic resources". With respect to new OE and Anglo-Saxon computer software and developments, the reader is referred to the *Old English Newsletter*[4] "Circolwyrde" section, and Bernstein (1997, 1998), Caie (1999), Foys (1999, 2000), and Martín Arista (1999).

A further element should be included in our definition: the use of computer software as a tool in the classroom. Just as overhead projectors have been the order of day since the seventies, we now have the opportunity of using video projectors connected to our portable computers and of making the most of such programmes as Microsoft *PowerPoint*. Let's imagine we are translating an OE poem in class. We may want to present vocabulary items first and then the lines to translate. A *PowerPoint* presentation is much more eye-catching and effective, and besides, as Kitao (1995) points out, "it would be wasteful and expensive to do this on paper, but computers are an economical way to do it".

We should never minimize the role of the teacher or instructor nor should we be misled into thinking that learning will take place without his guiding hand, especially when providing relevant Internet links for the students to visit. Jones (2000:362) is quite explicit in this respect: "if the computer program is undertaken as part of an institutional course [...], the teacher's role will be far from minimal." I know from experience that leaving students alone facing the Internet is inefficient, time-consuming and sometimes discouraging. Roper (1996) also warns that "the Web *seems* very easy to use, but the enormity of information out there can indeed bowl one over, especially if one has little experience with the Internet." Not infrequently, our students do not know how to navigate the Web and teachers should not expect them "to be able to use a new medium automatically by themselves, no matter how user-friendly it might appear" (Roper, 1996).[5] Before the CAI project starts, we should teach our students about hierarchies of information and about the different "advanced search" options and the various information-retrieval systems, for the "intellectual skills of categorization and generalization", says Roper (1996), "are becoming more crucial in an age of vast amounts of discontinuous information". Besides, all too often the role of the student-navigator is passive, they cannot "talk back to the Web", as Roper (1996) says, a problem which may be overcome by teaching them not only about the crucial importance of organizing their browser's "favorites carpet" but also of designing a personal links page of their own with a *wysiwyg* editor. Again Roper (1996) hits the bull's eye: "I found that the Web and the Labyrinth[6], for all their new-age sophistication, are still largely passive instruments of information. That is, as you explore the Web, you may jump from link to link, and thereby actively flip to different pieces of information, but when you get there, you just look at or read what is on your screen; rarely do you interact with it, add to it, ask questions of it, manipulate it. Furthermore, you pursue only the links others have created". What is more, they should also be instructed on how to use some website-extracting software so that they can later modify the information they have obtained. Finally, apart from simply providing links, students should be asked questions whose answers must be found on the web, or assigned projects whose implementation requires visiting recommended sites and retrieving information for subsequent treatment.[7]

III. GENERAL OE COURSES & GRAMMAR (Stand-alone or Web-based Applications, and Websites)

In this section we analyse OE CAI applications, whether they be stand-alone or web-based, or websites composed of a varying number of inter-linked pages, with or without *Java* applets associated with them, with or without frames. As we shall see, not all of them go to the same depths as far as contents are concerned, or have the same degree of quality in scholarship standards, design, or pedagogical features. For example, a common factor which all these courses suffer from is the fact that the students taking them are expected to have had little linguistic training, so that the courses must first go through "the parts of speech, the structure of a sentence, the skill of parsing, the basic concept of an inflected language, the relationship between subject and object", as complains Drout (1999:29). Besides, students do not always get the help they need. Paraphrasing Kitao (1995), computers should be programmed to give immediate feedback by confirming that an answer is correct, by giving the correct answer, by providing hints if the answer is incorrect. The fact remains that very few applications or websites provide intelligent feedback. As Kitao (1995) says, CAI should contribute to individualizing learning: "Students can study materials related to their individual goals and what they need or are interested in, with the appropriate difficulty level and at their own pace. Computers can analyze the problems of each student, and the teacher can help individual students with their problems based on the analysis". In fact, "CAI has the potential to enhance individualized instruction without requiring an increase in the number of teachers" (Kitao, 1995). Stand-alone and web-based applications can "release a learner from his or her teacher's supervision at an early stage" (Jones, 2000:363). Finally, as far as quality is concerned, we are aware that "not all of these Web-based programs, which are now steadily increasing in number, undergo the same degree of rigorous trialling and evaluation as commercial CD-ROMs." (Jones, 2000:361). As with any other product, computers and software can only do what they are programmed to do, and each kind of software has its own limitations. For example, such a useful feature as copying and pasting is impossible with the kind of javascript applications used by many OE teachers / programmers. The basic problem is that computer programmes "tailored to a particular user's needs" are expensive (Kitao, 1995), and the more advanced the programme or the more complex and graphic-loaded the website, the more expensive the hardware needed. Normally, software is always one step ahead of hardware, and students (and universities too) may lack the financial resources to keep abreast of new new developments.

III.1. The Pioneers

It is to be expected that the first applications for learning OE on a computer should be stand-alone programmes created by OE lecturers with an interest or some training in computing. The first software to be made generally available was J. Carroll's ***Flashcard*** programme[8], a DOS vocabulary drill programme allowing students to test themselves on OE vocabulary. It has a customizable dictionary and its vocabulary list may be adapted to students' particular needs. When presented with flashcards, students may not enter the ModE translation, just check whether their mental guess is correct. They can, however, choose the number of words they will be presented with in the list. Once they have finished the drill, they may view the entire flashcard list. In 1992 the author integrated this application into a more complete one, called ***Old English Grammar Tutor***[9], which contains drills on NOUN, PRONOUN and VERB morphology. Another seminal application is McCrae-Gibson's 1988 DOS-running ***Learning Old English: Computer Exercises***, an electronic version of his *Introduction to Old English*[10] whose exercises match the book's lessons. Although it was a real breakthrough, the programme has not stood the test of time. Usage instructions are not too easy to understand and the fact of its being a pre-mouse era programme makes usage difficult. Students are basically asked to identify syntactic functions and to translate sentences into PDE —and some into OE. These translation exercises are limited by the fact that the students' input is checked against just one possible correct answer, no variants or alternatives being admitted. The sequence of "events" may not be altered, except in the exercise on verbs. If the students fail to enter the correct answer, they are eventually asked whether pertinent grammatical explanations should be shown. Finally, there is a unauthored commercial DOS-running application to learn ***OE morphology***, distributed by Liberation Philology Software[11], which presents NOUN and VERB morphology, together with a flashcard vocabulary programme. Explanations are followed by self-testing quizzes (multiple choice, blank-filling and parsing tests).

III.2. *The Essentials of Old English*

In 1998, J. Smith and J. Anderson, of the University of Glasgow, took OE learning software one step further by developing, as part the STELLA Project,[12] a computer application called ***The Essentials Of Old English***, made up of two "Books", one for absolute beginners, the second for more advanced students. The software is easy to install and use, and takes up a little more of 1.5 megas of hard-drive space. "Book 1" consists of an INTRODUCTION, a BASIC GRAMMAR, a series of EXERCISES and a GLOSSARY, apart from the EXERCISE SECTION accessible by clicking a button. The grammar section is a basic introduction to OE SPELLING AND PRONUNCIATION, to CLAUSE AND PHRASE SYNTAX, and to the main MORPHOLOGICAL PARADIGMS. "Book 2" contains a FOREWORD, a list of ABBREVIATIONS AND PHONETIC SIGNS, an INTRODUCTION with basic bibliography, a more extended but still basic GRAMMAR, with the same sections as that of "Book 1", a STUDY GUIDE for the students, and a GLOSSARY. Both "books" are pretty much the same in structure. Besides, they share the reading texts, only in "Book 2" the translated version pops up only upon the user's request. This would be more useful if the student could write his own translation and then check, but he is only allowed to read. As for the glossary, that of "Book 2" has an extra feature: a basic PDE-OE DICTIONARY. The format of the exercises is quite similar to that of Carroll (1992) and McCrae-Gibson (1988). Of course, it's no longer a DOS-running but a *Java* application[13], but what students are asked to do, how they do it and how they are told their input is right or wrong is basically the same. In a typical exercise, the student answers the questions by clicking on a particular word in a sentence; by ticking a check box and writing the correct word in an empty box; by writing the missing word in a sentence; by writing the PDE translation of the OE word missing in a sentence; or by translating into PDE. If the answer is correct, he is told so by a tick which appears at the end of the sentence. If it is incorrect, he is invited to try again just once, but he is not told what was wrong, not even which grammar section he should revise. In a course meant for self-study, the student is simply left on his own and advised to read the GRAMMAR before continuing with the exercise and find for himself where he went wrong. "Book 1" exercises deal about PART OF SPEECH RECOGNITION, ERROR RECOGNITION, DEMONSTRATIVES, and VERB FORMS. We deem the Exercises to be highly deficient in terms of amount of practice: there are far too few sentences in each exercise. For example, the translation exercise is made up of just one sentence. "Book 2" has exercises on NOUN AND VERB PHRASES, on PART OF SPEECH RECOGNITION, on the USE OF THE CASES, on ADJECTIVES, and on SUBORDINATE CLAUSES. The format of the exercises is as follows: either writing the translation of isolated OE words (nouns, verbs; a vocabulary exercise rather than a grammar one) or writing the OE translation of PDE phrases and words (verbs, nouns, pronouns, adjectives, conjunctions; inflected for different cases, tenses, degrees) inserted in the OE sentence, or viceversa. The "books" contain just text, no graphics and very little hypertext, not even the possibility of copying and pasting into another application. In other words, computer possibilities are left unexploited and the programme is just used to read and fill in blanks. Such a useful feature as would have been reading the texts and, through links, reaching all the words in the glossary or relevant paradigms in the morphology section is simply non-existent. There are links only in the GRAMMAR's *Table of Contents* to go the relevant sections, but no links within the grammar. Highlighted words in the reading texts are not really links: the mouse left button simply works as the right key in many Microsoft applications, i.e. a sort of contextualized brief explanation bubble pops up. As for content and level, both "books" are basic, so that the use of the application in an OE or HEL subject in a Philology course would be limited to the first classes of the course. *Essentials* does not contribute much as far as innovation is concerned: we believe that pretty much the same could be achieved by reading a textbook and doing exercises on paper.

III.3. Calloe

CALLOE[14] stands for *Computer-Assisted Language Learning of Old English*, a Windows-running programme whose core application is ***MAOET*** *—Morphological Analysis of Old English Texts*. It was developed in 1996 by A. Miranda[15], J. Calle[16] and J.L. Triviño[17], of the University of Málaga, Spain, has undergone several improvements[18], and is currently used by OE students at this university. *MAOET* contains several modifiable texts which can be inputted for morphological parsing: excerpts from *Appolonius of Tyre*, the OE texts from manuals by de la Cruz and Cañete.[19] However, new texts may also be inputted by users for analysis, though they must be typed with the fonts provided. Parsing may be carried out in various manners. First, three morphological analysis options are given: long analysis, translate analysis and disambiguate. Second, the actual analysis may be implemented on the whole text or on the selected word(s). By combining these options, the parsing is performed on selected words, sentence by sentence or the whole texts. The output is presented in a new window and may be saved as a *txt* file. *CALLOE* also contains exercises on morphology. Typically the student is given a word, for example *habban*, together with a parser-like description of another form of the same word for example "VerbWeak3Plu1st,2nd, 3rd**PrsSub", and he is asked to write his guess in a blank box, *hæbben* in our example. Unless the right answer is keyed in by the student or inserted by clicking on the solution button, the programme does not allow moving on to the next questions. The option exists to limit the grammar elements to be practised (strong and weak nouns; strong and weak adjectives; pronouns; strong, weak, preterite-present and anomalous verbs; irregular words). The morphology to be practised in the exercises can be edited by the user for it is contained in a database, though the actual questions and the database itself are not user-modifiable. Finally, *CALLOE* also contains a grammar of OE, which can be opened from the *help* button. The grammar is devoted exclusively to nominal (nouns, pronouns, adjectives) and verbal morphology, plus a descriptive *chapter* on phonology. An extra feature is that some of the OE texts are presented with an audio-player for they have accompanying sound-files. Finally, all OE special characters (long vowels with macrons included) and phonetic symbols may be chosen from the Fast Character Window. The font files are included in the package for

III.2. *The Essentials of Old English*

In 1998, J. Smith and J. Anderson, of the University of Glasgow, took OE learning software one step further by developing, as part the STELLA Project,[12] a computer application called ***The Essentials Of Old English***, made up of two "Books", one for absolute beginners, the second for more advanced students. The software is easy to install and use, and takes up a little more of 1.5 megas of hard-drive space. "Book 1" consists of an INTRODUCTION, a BASIC GRAMMAR, a series of EXERCISES and a GLOSSARY, apart from the EXERCISE SECTION accessible by clicking a button. The grammar section is a basic introduction to OE SPELLING AND PRONUNCIATION, to CLAUSE AND PHRASE SYNTAX, and to the main MORPHOLOGICAL PARADIGMS. "Book 2" contains a FOREWORD, a list of ABBREVIATIONS AND PHONETIC SIGNS, an INTRODUCTION with basic bibliography, a more extended but still basic GRAMMAR, with the same sections as that of "Book 1", a STUDY GUIDE for the students, and a GLOSSARY. Both "books" are pretty much the same in structure. Besides, they share the reading texts, only in "Book 2" the translated version pops up only upon the user's request. This would be more useful if the student could write his own translation and then check, but he is only allowed to read. As for the glossary, that of "Book 2" has an extra feature: a basic PDE-OE DICTIONARY. The format of the exercises is quite similar to that of Carroll (1992) and McCrae-Gibson (1988). Of course, it's no longer a DOS-running but a *Java* application[13], but what students are asked to do, how they do it and how they are told their input is right or wrong is basically the same. In a typical exercise, the student answers the questions by clicking on a particular word in a sentence; by ticking a check box and writing the correct word in an empty box; by writing the missing word in a sentence; by writing the PDE translation of the OE word missing in a sentence; or by translating into PDE. If the answer is correct, he is told so by a tick which appears at the end of the sentence. If it is incorrect, he is invited to try again just once, but he is not told what was wrong, not even which grammar section he should revise. In a course meant for self-study, the student is simply left on his own and advised to read the GRAMMAR before continuing with the exercise and find for himself where he went wrong. "Book 1" exercises deal about PART OF SPEECH RECOGNITION, ERROR RECOGNITION, DEMONSTRATIVES, and VERB FORMS. We deem the Exercises to be highly deficient in terms of amount of practice: there are far too few sentences in each exercise. For example, the translation exercise is made up of just one sentence. "Book 2" has exercises on NOUN AND VERB PHRASES, on PART OF SPEECH RECOGNITION, on the USE OF THE CASES, on ADJECTIVES, and on SUBORDINATE CLAUSES. The format of the exercises is as follows: either writing the translation of isolated OE words (nouns, verbs; a vocabulary exercise rather than a grammar one) or writing the OE translation of PDE phrases and words (verbs, nouns, pronouns, adjectives, conjunctions; inflected for different cases, tenses, degrees) inserted in the OE sentence, or viceversa. The "books" contain just text, no graphics and very little hypertext, not even the possibility of copying and pasting into another application. In other words, computer possibilities are left unexploited and the programme is just used to read and fill in blanks. Such a useful feature as would have been reading the texts and, through links, apart from *Real Player* for the sound files. One definite improvement on previous software is precisely that all the texts be either read or listened to. Of course, OE not being a living language, *OEA* lacks voice-recording and pronunciation features, but an "application that relates to Old English, obviously, can dispense with such components and concentrate on interactions with the text" (Baker, 1999b). *OEA* has 8 sections or chapters: an INTRODUCTION, with clear instructions about how to use the method and do the exercises; SENTENCE ELEMENTS; CASES; PARTS OF SPEECH; the BIBLICAL NARRATION of Adam's fall with accompanying exercises; AGREEMENT; VOWELS and PALATAL MUTATION; READING TEXTS: *The Life of St Æthelthryth*, *The Story of Caedmon*, *The Story of Caedmon* y *Wulf and Eadwacer*. The different chapters' mainpages can be accessed from the *OEA* principal page called *Workout Room*.

The chapters' mainpages are divided into three horizontal frames: the upper frame contains the name of the course (*OEA*), a link to the *Workout Room*, and a little icon indicating that a *Java* application has been started; the middle frame contains relevant but extremely basic grammar explanations; and the lower frame is reserved for the *Real Audio* reproducer. The *Java* screens are divided into several horizontal sections: the title bar with the name of the exercise; the button bar allowing to move from one exercise to another or from one sentence to another within an exercise, to submit a choice, to get help, and to see one's score; right underneath, several windows for the text, the instructions, the feedback messages, and the multiple-choice or blank-filling exercises. Feedback is given immediately after answering. There are basically two types of tasks: *find* tasks, such as "find nouns in the sentences", require the student to simply mouse-point at a noun in the text and left-click the mouse, while in the *multiple-choice* or *blank-filling* types of tasks the "submit" button has to be used to input the answer. The Instructions window may contain hyperlinks to grammar explanations, though these are extremely basic. As for, the reading texts, they are presented differently, though still in a *Java* screen. Each reading text has a mainpage giving basic information and a link to the corresponding audio file[25].

There exist, in our opinion, several faults in *OEA*. First of all, it assumes very little linguistic knowledge on the part of the students and can only be considered as material suitable to complement a classroom- or book-based course, though this is a *problem* many other applications suffer from, as we have already stated. Even though *OEA* is a much more complete method —from both CAI and linguistic viewpoints— than *The Essentials of Old English*, it still remains a simple introduction to OE. Another feature which is lacking is that the texts, because they are accessible only from within the *Java* screens, cannot be copied and pasted onto a word-processor for further exploitation by the students. This inconvenience is partially obviated in the online version of *OEA* by possibility of downloading the text in *pdf* format, although, unless one has the full Adobe *Acrobat* software, it can only be read or printed, but not changed. Also, once an answer has been inputted or an exercise finished, it cannot be redone, unless the student exits the *Java* application and executes it again.

However, *OEA* has many pros. First of all, it is free. Secondly, apart from being an application that may be used online, it may be downloaded to be run as a stand-alone application on one's personal computer. Furthermore, permission is given to install it on a Web server for any lecturer's students to use. Thirdly, there is a little box on the upper bar of the *Java* apps indicating the total number of correct answers. This is particularly important: learners should have opportunities, as Simic (2000) says, not only "to make decisions that control or influence the computer task" but also "to monitor their own learning" and "self-check and correct their own errors".[26] Fourth, we have also found it quite handy that the Java apps should start and terminate automatically when browsing to and fro from the different chapters' mainpages. Fifth, a particularly useful feature of *OEA* is the fact that all the words in the texts and sentences are hypertext links. Indeed, highlighted words are straightforward left-clickable links to relevant historical, biographical or cultural information, which appears in the central frame of the text's mainpage. Besides, all words, whether highlighted or not, can be rightclicked to access information of various kind. Some of the information items of these *contextualized menus*, namely "view grammar"[27], "look up word"[28], "look up idiom" and "view clause type", appear in small *ad-hoc* windows which pop up in the bottom right corner of the screen. The other two produce different results: "select clause" highlights the clause against a black background, and "play audio", obviously, plays the audio file (fully or by parts). Mention should also be made of the fact that the hyperlinks in *OEA*'s reading texts are not underlined nor written in another colour. This is something the author himself purported to achieve by using SGML tagging (Cf. Baker, 1999b). This feature of *OEA* alone is enough to make it a much more advanced application than previous ones. Last, but not least, the author has made the source code file-writing instruction publicly available[29], even though "[it] is incredibly tedious to write the SGML files you need for this application" (Baker, 1999a).

III.7. Verbix

So far we have seen web-based and javascript applications to learn or practise OE grammar. There exists an interesting commercial piece of software that generates inflected verb forms in many languages —OE included— called ***Verbix 4.2 for Windows***[30]. The application is also available as a free Internet service under the name of ***WebVerbix***, though this version does not have as many features[31]. In order to be able to view special characters correctly on the screen, the latest browser versions are recommended and *Unicode®* codification[32] must be selected or supported, though some vowels with macrons seem unwilling to show properly. The consultation page has buttons linking to the glossaries, which can work in any direction, e.g. from OE to PDE, or viceversa. The commercial version is very useful for OE students for it is able to convert any inflected form into an infinitive, and it can very well supplement an electronic dictionary, where verb entries are naturally in the infinitive.[33]

III.8. Hwæt! Old English in Context at Georgetown University

Back in 1996, C. Ball[34], of Georgetown University, created ***Hwæt! Old English in Context***[35], a little course to acquire OE vocabulary at an elementary level "for those who would like to learn some basic Old English without having to hold a grammar book in one hand and a dictionary in the other" (Ball, 1996a). What we have found innovative is the application to OE learning of a long-standing pedagogical tenet in modern language learning: vocabulary is learnt if vocabulary is presented to the students in context, if they are allowed to use their knowledge of the world, their intuition about OE words' reflexes in PDE or their cognates in other languages. The course is made up of seven chapters entitled COUNTING, NATURE, GREETINGS, NAMING, MONTHS & SEASONS, FISH, FOUL & FOUR-FOOTED BEASTS, and THE BODY. No translations of the texts are offered to the student, nor is there a bilingual glossary. The words contained in the glossary and some words in the texts or sentences are hyperlinks to picture files. Besides, some words in the glossary can be listened to individually (*aiff.* audio files). *Hwæt!* is a mixture of non-academic features, such as the pictorial glossary, and rigorous academic edition: all texts, or rather sentences, are excerpted from the *Toronto Dictionary of Old English Corpus*[36].[37] *Hwæt!* is obviously more of a personal experiment than a really usable course, though the author herself has used it with her students, she admits having had to resort to other methods "including concordances for morphology and syntactic constructions and some translation exercises" (Ball, 1996a). She is also absolutely right when she says that her method lacks all kind of feedback whatsoever for the students to monitor their progress and, besides, it does not allow them to automatically move "from the known to the unknown, acquiring the grammar and lexicon of OE along the way" (Ball, 1996a). In other words, the programme does not accommodate and change according to the student's progress. Of course, this seems quite difficult to achieve just on *html* language, and *Hwæt!* is not the only programme lacking this feature. In any event, there is no doubt that this vocabulary-acquisition method is entertaining and effective.

III.9. Learning Old English

In 1997 T. Jebson published ***Learning Old English*** on the Internet. There now exist two versions, an unmaintained one[38] and an updated but still unfinished one (2001)[39] which only runs on Microsoft *Internet Explorer* and allows Latin-extended characters A. From the CALL point of view, the course is poor for it consists of just a mainpage with a Table of Contents whose items point at the rest of the webpages, each webpage being a chapter. Now, these webpages contain no links whatsoever. They are just text pages to be read or printed. However, from a linguistic point of view the information is philologically and linguistically sound and quite complete. The author decided to write *LOE* urged by his need to present readers with a guide that would overcome the difficulties he himself had experienced when studying OE on his own by using Mitchell & Robinson's *Guide to Old English*.[40]

III.10. King Alfred at Wheaton College

A recent OE CAI application on the Web is Michael Drout[41] and David Dudek's ***King Alfred, A Teacher-Controlled, Web-Interfaced Old English Learning Assistant*** [42]. This is a translation application which coaches the student towards competence in OE. What makes this programme different from both *The Essentials of Old English* and *OEA* is the help and feedback functions. The students' help requests —available at all stages by clicking on any word— are stored by the programme to be consulted at any time. One of the *fortes* of *King Alfred* is that the application "using a sorting algorithm that [the authors] are currently upgrading to a true 'intelligent agent' prioritizes the grammatical areas for the student to review" (Drout, 1999). For example, the application delivers the following feedback: "*King Alfred* suggests that you review the *Verb*, particularly the *Preterite-Present_Verbs*; the *Noun*, particularly the *Accusative Case*, and the *Adverb*", and the student may reach the relevant section in the online grammar by clicking on the any of the underlined words. The application can also give students a list of the lexical items for which they had requested help in the translation phase, which can be printed out. This means that the application "provides individually customized feedback to students" and "individualized advice and study suggestions" (Drout, 1999). Another advantage of *King Alfred* is that the paradigms for each word are provided in full. Secondly, once students have inputted their translation, they can compare it with the programme's suggested translation and assess its quality. The authors rightly believe that this method is better than one in which, because of a simple word-order change, a different lexical choice or a word misspelt, the application will mark the translation as wrong, thus demotivating students. Thirdly, OE instructors can easily change or update the contents to meet their own preferences or requirements: "A series of easy-to-use pop-up menus in a database allows a teacher to input the sentences (with the characteristics of each word) that he or she will use in the program" (Drout, 1999). The program is claimed to speed up OE learning: according to the author, by the end of a fourteen-week course in 1999, Drout's students were able to translate not only OE prose but poetry (*The Wanderer*, *The Seafarer*, *The Dream of the Rood*).[43]

III.11. English 401 at the University of Calgary

Another OE computer-assisted course, integrated within a University of Calgary syllabus, is ***English 401***[44], a thorough fully-fledged distance-education Internet-based online course created by Murray McGillivray[45]. All the pages are interlinked so that navigation within the site proves quite easy. Besides, the logo picture at the top of each page includes links to each of the main sections of the course: COURSE INFORMATION, LESSONS, TEXTS, GRAMMAR, CREDIT EXERCISES[46], LINKS, and SITE INDEX. Likewise, all lessons may be accessed from any one lesson through the links at the bottom of each page. What is more, users always know where exactly they are: this information is provided in a line just underneath the logo on each page, and each of the components of this line is a link to the relevant section. This may seem trivial but it certainly is not. In fact, it is an extremely useful feature that well-designed pages should always contain.[47]

Each of the 15 lessons[48] has a short introduction followed by the *Tasks* to be done by the students. There are various types of tasks, which can be reached through hypertext linking words. By way of example we shall mention the tasks required in Lesson 5 (Weak Verbs): reading the *The Voyage of Ohþere*[49], reading the Grammar webpages on Strong Feminine Nouns, the verb *beon* and the Personal Pronouns, flashcard exercises on weak nouns, following some links to relevant websites on other servers, of non-linguistic —and non-scholarly— content, like the *King Alfred the Great Website*[50], and finally sending a "succinct, relevant message" to the course's listserver. The *grammar webpages* are basic as far as content is concerned, albeit clear, well-explained and sufficiently illustrated. These pages contain very few links, consisting mainly of plain text, which makes them a computer alternative to a textbook, but this is a contents area within a large website, a layer which by definition should provide only core information. One serious flaw in this section is the fact that OE syntax is only approached superficially and indirectly in the chapter on the use of the *dreaded* subjunctive. *Flashcards* are composed of an "instructions" section and a basic *Java* application in the lower half of the webpage, but it does not allow writing the answers and submitting them for correction. The *credit exercises* are not available publicly, so that we have been unable to evaluate them. The *course's texts* are not necessarily hosted at the U. of Calgary's server, but elsewhere on the Internet[51], which precisely supports our definition of CALL and CAI as having to include the Web. External links of this sort are to be expected and advisable, since some very high quality and useful editions of OE texts have already been published on the Internet and it would be wasteful not to take advantage of what already exists in the web.[52] A typical text webpage is divided into three horizontal frames. The upper frame is fixed and contains links to the other sections in the course. The middle frame is itself divided into two vertical frames, the left one for the OE text and the right one for the PDE translation. At the beginning of the OE text there is a link to the audio file, should one want to read and listen to the text simultaneously. The lower frame is the bilingual glossary. Each word in the text is a hyperlink to the relevant letter section or word in the glossary, which gives not only the PDE equivalent but also morphological information. Some glossaries, such as that for *The Voyage of Ohþere*, contain a links to all instances of each word in the text, which is a useful feature, should one wish to see the word in different contexts.

III.12. Old English Lessons at Brown University

Ee-Ing Ong[53] published in 1999 a series of 16 OE tutorials called ***Old English Lessons***.[54] The mainpage contains the hypertext links to the *tutorials* or lessons. These tutorials are meant to complement a textbook- and classroom-based course. Each one consists of a single webpage with instructions on how to do the lesson's javascript exercise, which is activated through a button at the bottom of the page. Exercise pages typically consists of several frames in different colours. Each lesson has only one exercise of the gap-filling type, the gap being an empty box. The gap-filling exercise, in the top left frame of all the tutorials, is made up of just seven questions, or rather seven OE sentences. The dictionary entry form (nominative or infinitive) of the word is written in brackets immediately before the box, and, besides, the student can consult the PDE translation underneath. After writing in the answer, the *submit answer* button must be clicked and feedback is given to the student in the right frame. The lower right frame shows the full OE sentence together with the word entered by the student. The lower middle frame contains information on OE special graphemes. The top right frame contains information about the feedback frame underneath, which in turn provides two types of information about the student's input: if the answer is wrong, a choice of four possibilities is offered to the student so that he may re-enter the answer; if the answer is right, further information on the word or on any other item or feature of the sentence is given. As far as linguistic content is concerned, the tutorials are concerned almost exclusively with OE morphology at an elementary level. All the OE sentences are attested sentences, and relevant references are given. One of the technical problems with this tutorial is the way special OE characters have to be keyed in. For example, the thorn, "þ", cannot be written simply by pressing Alt+0254, which would cumbersome enough in any case, but the combination "&thorn;" must be entered instead, otherwise the programme will not accept the answer, the reason being, according to the author, that "the javascript and the dynamic fonts are very uncooperative"(Ee-Ing Ong, 1999).

III.13. Old English Pages

There exists an unfinished and unauthored[55] site hosted on a Russian server called ***Old English Pages***[56] containing several sections: SAXONICA, AN ANGLO-SAXON KNOWLEDGE BOOK (most of whose contents structure dangerously resembles C. Ball's *Hwæt!*[57], while the grammar section is acknowledged as being excerpted from M. Drout's *King Ælfred Grammar*); an OLD ENGLISH LIBRARY with some unedited OE texts (no notes, no references, and no hypertext); OLD ENGLISH STUDY TOOLS composed, among other tools, of an "Old English Glossary" (with an input box for the word to be searched in a web-supported database) and a "Latin-Old English Intergloss"[58]. The site looks promising on first visiting it, but its internal structure is somewhat opaque, for it contains sections which are called the same but whose contents are slightly different.

III.14. Old English Exercises at the University of Massachusetts

In 2001, University of Massachusetts S. Harris[59], published ***Old English Exercises***[60], which, according to the author, complement Drout's *King Alfred*. The site contains several applications, two of which are directly related to OE CAI. First, there is the ***Old English Exercises*** proper[61], a series of six basic javascript exercises for students to practise OE morphology (DEMONSTRATIVES AND ARTICLES, PERSONAL PRONOUNS, CASES, GENDER, and NUMBER). The type of exercise is very simple indeed: the student identifies what he is asked (a demonstrative, a case, a number) either by typing it in an empty box and then clicking the *check* button for feedback, or by choosing the correct option in a listbox. *OEE* is more of an experiment or the initial stage of an OE CAI project than a real application for learning OE. In fact, each exercise is composed of just 10 sentences. No special graphemes are admitted: the thorn ("þ") must replaced by the digraph "th". The application does not allow to return to a previous question in the exercise, so that in order to re-do a particular sentence, the student has to go back to the previous webpage and click on the link once again and start from scratch. However, he can proceed forward even if the answer is wrong. The second application is the ***Beowulf Parser***[62], which can parse *Beowulf* for personal and demonstrative pronouns. The possibility of looking at attested examples of pronoun usage partially makes up for the fact that in *OEE* the sentences used are made up for the purpose[63]. The same author has also created another two pieces of software: ***Search ASPR***[64]and an ***Old English Grammar Chart***[65], which may be consulted by students while doing online exercises.

III.15. The Historical Grammar of the Old English Language

An online OE grammar is ***The Historical Grammar of the Old English Language***[66], created by C. Babaev[67]. The webpages contain a few links to sound files (to hear some words pronounced) and a little hypertext to explain some terms (mainly names of languages). The table of contents is laid out both at the top and the bottom of each page in order to facilitate navigation, for, like Jebson's website, there are no frames. The defect language codification of the pages is "Cyrillic" and users must manually choose "Western European" in order to view characters correctly. The grammar is made up of ten chapters (devoted to pronunciation and morphology) and a couple of appendices (one with three plain OE texts and their PDE translation, another about OE lexicon).

III.16. Handouts on the web

This is another way the Internet can be integrated into an OE CAI programme. Handouts and class notes or lectures may be downloaded by students from a server. Some ***Handouts about OE grammar***[68] may be found at the Adam Mickiewicz University (Poznán) School of button at the bottom of the page. Exercise pages typically consists of several frames in different colours. Each lesson has only one exercise of the gap-filling type, the gap being an empty box. The gap-filling exercise, in the top left frame of all the tutorials, is made up of just seven questions, or rather seven OE sentences. The dictionary entry form (nominative or infinitive) of the word is written in brackets immediately before the box, and, besides, the student can consult the PDE translation underneath. After writing in the answer, the *submit answer* button must be clicked and feedback is given to the student in the right frame. The lower right frame shows the full OE sentence together with the word entered by the student. The lower middle frame contains information on OE special graphemes. The top right frame contains information about the feedback frame underneath, which in turn provides two types of information about the student's input: if the answer is wrong, a choice of four possibilities is offered to the student so that he may re-enter the answer; if the answer is right, further information on the word or on any other item or feature of the sentence is given. As far as linguistic content is concerned, the tutorials are concerned almost exclusively with OE morphology at an elementary level. All the OE sentences are attested sentences, and relevant references are given. One of the technical problems with this tutorial is the way special OE characters have to be keyed in. For example, the thorn, "þ", cannot be written simply by pressing Alt+0254, which would cumbersome enough in any case, but the combination "&thorn;" must be entered instead, otherwise the programme will not accept the answer, the reason being, according to the author, that "the javascript and the dynamic fonts are very uncooperative"(Ee-Ing Ong, 1999).

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IV.2. The rationale: Hypertext, hypermedia and electronic books

One of the great advantages of turning a codex or paper book into an electronic book is the possibility of reading it without temporal and spatial constraints. If a book is composed of many smaller documents (chapters, lessons…), notes, graphics, references to other works, glosses, etc., its transfer to an electronic format enables the reader to reach and see these parts simultaneously. As McGann (1995) says, "computerization organizes [...] sequential engagements with nonsequential forms of knowledge and experience" and, according to Silver (1997), "along with its dynamic appearance, another striking feature of hypermedia is its lack of traditional linearity". He adds: "Unlike the linear, largely sequential writing which characterizes print-based publications, well-designed hypermedia makes possible - if not promotes - non-linear or multi-linear presentations. Instead of offering readers a single, sequential path to follow, hypermedia projects put forth many, often interlinked paths, roads, diversions, and excursions". This is what Nilsen (1997) calls "multilinearity". Both of them follow Nelson (1981, 0/2), who coined the term *hypertext*: "electronic text as *nonsequential writing*, a text that branches and allows choices to the reader, […] a series of text chunks connected by links which offer the reader different pathways." Another term, frequently used in connection with *hypertext*, is *hypermedia* or *multimedia*. Silver (1997) gives the following definition: "Multimedia elements can include text, photographs, images, and graphics, video and sound clips, and basic animation. They can exist side by side on a single screen; they can exist upon or overlapping one another; they can be hidden, revealed with a strategic button click or entered command". To sum it up, "multimedia environments allow for the addition of visual and auditory information to a text in order to improve comprehension". (Chun & Plass, 1997:63) These electronic texts can then be "distributed in self-contained forms (e.g., on CD-ROM disks, like the *Perseus Project*) or they can be structured for transmission through the Network" (McGann, 1995).

Let us point out what the practical advantages of hypertext are in OE CAI or in electronic editions of OE texts. Firstly, it is now possible to teach text and context at the same time. The ideal OE CAI programme should be like a encyclopaedia containing an OE grammar, an OE dictionary, critical editions of OE literature, articles on Anglo-Saxon culture, a vast collections of graphics, etc., to sum it up, it must be a specialized encyclopaedia. Mitchell (1995) is actually the book equivalent of what an OE CAI programme should be like. By combining language and culture in digital form and by using multimedia, the OE language would no longer be "just a list of grammatical paradigms or lexical items", for it would be "intimately associated with all kinds of verbal and paraverbal behaviors, an acoustic and visual context that is indissociable from the larger societal context in which the words are uttered" or written (Kramsch & Andersen, 1999:31). Language would thus become culture. At the same time, as Kramsch & Andersen (1999:31) say, culture would no longer be "just the factual pieces of information that textbooks present in the form of culture capsules on foreign mores, but [it would be] produced and reproduced under our very eyes, on the screen", through what Anglo-Saxons said or, rather, wrote.

Secondly, an electronic edition of an OE work presents many advantages over a printed one, the most obvious one being that "the apparatus of the edition can be hyperlinked to the texts themselves so that the relevant notes, variants, sources, and glosses may be accessed with the click of a mouse" (Lionarons, 2000). Besides, "two or more texts can be compared side by side in adjoining frames, searches can be performed quickly and painlessly, and the texts themselves may be manipulated to reveal or conceal manuscript context, scribal interpolations, and emended or doubtful passages" (Lionarons, 2000). Finally, the editor "need no longer choose between offering a diplomatic edition, a critical edition, or a simple manuscript transcription: all three can be provided simultaneously, and the interested student is thereby afforded an opportunity to see both the homilist and the editor at work" (Lionarons, 2000). To this we may add another reason, namely, that electronic editions are "a lot cheaper for people to get access to (and easier)" (Lee, 1990). Also, by definition, an electronic edition is constantly changing, improving and growing: "its contents and its webwork of relations (both internal and external) can be indefinitely expanded and developed" (McGann, 1995). To give an example, Lee (2000: Foreword) says that at the moment of publishing his edition on the web, "the hypertext linking is almost non-existent but that can be added to in the future", and that "any corrections needed will not result in future reprints and further costs for the end user."

From the point of view of the reader too, electronic editions have advantages. Lomicka (1998:41) claims that "computerized reading with full glossing may promote a deeper level of text comprehension". In the case of OE texts, where most words are unfamiliar at an initial stage, links or glosses, "may help to limit continual dictionary consultation that may hinder and interrupt the L2 reading comprehension process" (Lomicka, 1998:41). However, other authors, like Ziegfeld (1989:363) warn that reading a hypertext may take up to five or six times as long as the same text in printed format. So how much glossing or linking should an electronic text contain. Do links really improve reading comprehension o do they hinder it? Davis & Lyman-Hager (1989:42) point out that this may depend on the students themselves: "hypertext is 'invisible and unobtrusive', allowing the user to consult as much or as little information as s/he desires". Besides, multimedia programme annotations are not limited to textual information and can take the form of video, sound, and pictures, as Chun & Plass (1996) point out. In other words, "computer aided glossing can provide much more than the 'traditional' glosses (definitions, translations, and grammatical notes)" (Lomicka, 1998:42). This implies that, the new multimedia annotations, such as images, sounds, cultural, historical and geographical references, and guiding questions could enhance comprehension; cf. Martinez-Lage (1997:149). Besides, access to these annotations is immediate and "not as intrusive as the steps required in looking up words in the dictionary" (Lomicka, 1998:42) or consulting encyclopaedias, other editions, or articles, we may add.[82]

Now, what should hypertext look like? Where should links be present? What sort of information should they point to? Glosses are sometimes presented obtrusively, especially if the file is in *html* format, for links are always presented in another colour and underlined. Links to other sites or other parts of the same site should belong to another frame, while

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hypertext should not look like hypertext, which is what *OEA* achieves. It is important that electronic editions should have a hierarchical index that may be accessed at all times, that is, from the different screens of the application, from the different webpages or frames of a website. It should be "easy for a reader to return from anywhere in the hypertext to the starting point or *home* screen, so that readers are rarely disorientated while reading or searching" (Miall, 1999). Often, as we shall see, texts appear in one of the various frames of the website, but in order to read the text a single-window layout is preferable. As Miall (1999) says, "except for pop-up comment boxes, useful for short editorial comments or annotations[83], texts can only be read in full screen mode" for it is an "environment fosters the integrity of the single text and the sustained attention it requires from readers". Now, this may cause trouble in the case of webpages containing frames. But we shall come back to this later on.

Following Bernhardt (1991) and Davis & Lyman-Hager (1997), we believe that textual links should target the following types of information. First of all, words must be recognized, so links should be provided to access a glossary, preferably to be viewed in a different frame. Alternatively, a dictionary database (*Access* or *mySQL*, for example) should made available in another frame. This glossary should provide lexical information, whether in the form of a translation or a definition. Secondly, it should contain phonological and graphemic information. This is important in the case of OE not only because phonology is an essential component of an OE course but also because OE spelling varies according to dialect and period. Some of the applications reviewed here do in fact contain sound files for individual words. Thirdly, to reinforce comprehension of the text, grammatical information should be given, morphological and syntactic. Fourth, in order to improve global understanding and help students relate text and ideas, intratextual links should be provided, of semantic and linguistic nature. We have noticed that, in the applications and text editions reviewed in this chapter, most of the hypertext links are external, i.e. they point to other sections of the website or to documents hosted on other servers. This may be due to the tiresome process of hypermarking text or else to insufficient awareness of the dual nature of links. As Roby (1999) points out, "Glosses [are] characterized by their focus. Some point the reader back to the text, whereas others bring new information to it." Lastly, the reader's prior knowledge should be increased by means of cultural references links (history, philosophy, religion, biography, art, etc.).

A distinction should be drawn between the use of hypertext for study purposes and its use to read literature, the latter use being opposed to by many writers. According to Miall (1999), one of the significant advantages of the electronic medium is the fact that it is "practically unlimited in terms of space (and large colour graphics take up a good deal of space), bringing benefits impossible to achieve with a printed text". At the same time, this author warns that "the availability of other texts and colour graphics also threatens to displace the kind of literary reading I have been describing, and substitute links to further texts and pictures for the sustained attention that yields literary understanding". Students of Anglo-Saxon literature should therefore be aware that following all links to understand and

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contextualize a literary work is not the same as reading it. The primary task of reading should perhaps be carried out on a non-hypertextual electronic text or a printed one, if available.

Other useful features, which most applications and websites analyzed lack, are readers' utilities. It would be most convenient for readers of an electronic text to be able to create bookmarks so that they can return to the same point in the text from anywhere in the hypertext" (Miall, 1999). Likewise, small windows could be called up for readers "to enter their own comments", so that they can later be saved on disk or exported to a word processor. In a translation application, this can be achieved simply by inserting a text box. Finally, a feature which all the sites lack is a links basket. If working on our own computer, we may store sites visited and links in the Favourites Folder. However, when working in a computer lab or in a cybercafé, students won't have this possibility, so that a links basket which can be emptied into a file at the end of the session would prove very useful.

A final *caveat* about electronic books is the fact applications have massively migrated to the Internet in the last few years. As Hall (2000) says, "In some respects the greatest value of the Internet is the incredible amount of primary materials now being made available free and online. While proprietary learning programs and CD-ROMs once dominated teaching technology, the advent of the Web has inspired a popular revolution." The danger is that students should be sent to websites containing editions of poor scholarly standard. Student should therefore be trained to be critical and enquire about the authors, their sources of information, the server the resource is hosted in, the date of creation or publication, how it compares to other printed or web-based resources, whether it is referenced in academic literature or linked to from reliable websites.[84] "Navigating the vastness of the Web presents a challenge to teachers and students alike, but it also introduces another means of teaching students to learn to use their judgement and skills of critical evaluation" (Hall, 2000). Lee & Cooper's (2000: Review, Information Quality) give similar warnings and add that, even if the original site or application passes our quality control test, "the linked material may be inferior in quality to the site to which it is linked —and one must evaluate that as well" (Lee & Cooper, 2000: Review, The Pitfalls).[85] Duggan (1994) summarized the situation thus: "All too often in the preparation and publication of electronic texts, the chief criterion for choosing a text to be 'input' for the electronic edition is expiration of copyright. Computerized literary scholars have so far demonstrated a tendency to exploit the computers for quick-and-dirty textual solutions, to expend their efforts upon compiling massive amounts of textually uneven materials rather than upon producing reliable scholarly editions." The situation has changed a little, but many of the web-based editions reviewed here are not wholly scholarly, though still usable but students.

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IV.3. Non-scholarly editions

There are many sites where students may find OE texts to read and often what is needed is not a scholarly or hypertext edition but just the plain text or the translation. Of course, texts published as part of an application or a well-designed website may be hypermarked and linked to accompanying glossaries, notes, or translations, which prove invaluable help for students. But simpler stuff should not be looked down on and students need to be told where to get it, though they should be aware of the scholarly quality of what they are using.

For example, students' course projects may take the form of websites and some are available online. M. Heroux[86], has published a webpage[87] with some ***OE poetry*** as his course project. The five poems are presented in OE, PDE and as a scanned images. The texts are: *Almsgiving*, *Bede's Death Song*, A Charm, *Deor*, *The Seafarer*. Likewise, H. Ahrens[88] has mounted a page containing the OE poem ***The Wife's Lament***[89], a free translation, a line-by-line translation, together with an introduction, a commentary on the translation and bibliography. Each line in the OE text has a number, which is a link to that line's translation in the line-by-line translation, which in turn contains a link to get back to the original text. Another webpage called ***A Brief Old English Text Page***[90] was published in 1996 by high school teacher B. Zahn[91], and the texts were selected "for no other reason that they were relatively short" and could be typed in "pretty quickly": *The Dream of the Rood*, *Neoxnawang* and *The Battle of Brunanburh*. ***The Battle of Brunanburh***[92], is also available online, both in OE and PDE, with the feature that each OE line is linked to the corresponding PDE translation. Another OE poem, ***The Ruin***[93], is presented in a two-framed page, with the OE on the left one and either of two translations[94] on the right one. Also, the *Vercelli Book* OE poetry is offered online by the Associazione "Rete Civica Vercellese" at their webpage, called "**Il Vercelli Book**"[95]. An unedited version ***Rune Poem***[96] in OE, has been published online in the non-academic **Anglo-Saxon Heathenism** website[97]. One website to visit to access biblical texts online in OE is M. van der Hoek's[98] ***New Anglo-Saxon Bible***[99], which is still unfinished but already contains a good number of texts, not only from the Old and the New Testaments, but also other non-biblical Christian texts. An interesting site is ***The Polyglot Bible***, created by M. Davies, of Illinois State University. It contains the entire Gospel of St. Luke in 30 languages, OE included[100], and allows full-text searching and side-by-side viewing. The Internet Sacred Text Archive server[101] provides the ***Complete Corpus of Anglo-Saxon Poetry***[102] and *Beowulf* (PDE[103] and OE[104]). Sometimes, it is just a translation that our students may need. Translations are equally useful and there are many sites offering PDE versions of OE works, apart from the clearing houses mentioned above. For example, there exists a site containing an unauthored translation of ***The Battle of Maldon***[105], one of the Anglo-Saxon poems most widely used in OE courses, plus links together with maps and pictures of the actual site of the battle. Some translations from OE works are also published commercially on CD-ROM: the *Anglo-Saxon Chronicle*, *Beowulf* and the Codex Junius can be found in the ***Literature on CD-ROM***[106], published by Seedy Press. Also, ***The English Poetry Full-Text Database*** is a commercial CD-ROM published by ProQuest Information and Learning.[107] It claims to be a database of the complete English poetic cannon from Anglo-Saxon times. The great majority of the texts are out of copyright, so that many university libraries give members access to the collection for them to use freely. Finally, **L. Rodrigues electronic editions** of Anglo-Saxon poetry are sold online by Nospine.com.[108]

Many lecturers too mount websites with OE texts for their students to read. R. Liuza[109], of Tulane University, has published a number of copyright-free ***OE texts***[110] for his 1999 *Introduction to Old English* Course[111]. These texts correspond in the main to those found in Mitchell & Robinson's *Guide*.[112] J. Tinkler[113], of Towson University, provides OE prose excerpts for his ***History and Development of English Prose*** course[114] (from the *Anglo-Saxon Chronicle*, King Alfred, Ælfric and Wulfstan), with an interlinear translation of his own. M. Seibert, of the University of Virginia, has published a page called ***An Old English Translation Aid***[115] in which we may find links to online hypertext editions of *Cædmon's Hymn*, the *Dream of the Rood* and to some OE *Riddles*. *Cædmon's Hymn* is presented two frames: the left one present the hypertextual edition and the right one the glossary, and by clicking on any word of the text grammatical and lexical information about it is given in the glossary. The *Riddles*, however, are shown by means of three frames. What is interesting and an example of how the Web may be used in OE CAI is the fact that what is shown in the extra frame is a picture of *The Exeter Book*, a picture which is hosted on a different server located in the England and which belongs to an institution unrelated to the author's. However, the danger of relying on external material is that if it is removed or changed to another server, or if the server is down, the webpage is left blame, which is exactly what I found happened to the *Dream of the Rood*.[116] In 1999, A.M. Bruce[117], of Florida Southern College, mounted a website called ***Rood and Ruthwell, the Poem and the Cross***[118] where the *Dream of the Rood* may be read online. On the mainpage the author says that "the information herein, while interesting and certainly worth perusing, is not meant to be exhaustive; only basic theories, commentaries, and explanations are offered". The poem may be viewed in different fashions: a PDE translation, the OE version[119], and interlaced PDE and OE text. Once again, it is a pity that the poem should not be hypertextual and that there should be no glossary. Also available is a transcription of the Ruthwell Cross's runes plus photographs of the cross from different angles. We must also mention an advertising-supported well-designed website called ***Beowulf in Hypertext***[120], created by R. Ismail[121] and K. Ghosh[122], offering not only the poem but also a considerable amount of information about it. The mainpage contains two frames: the left one for the table of contents (INTRODUCTION, THE TEXT, CHARACTERS, HISTORY, SEARCH, SELF QUIZZ, LINKS, and CREDITS) and the right one for viewing the various content items. The TEXTS may be read either in OE or PDE, and chapters are chosen through a list-box. Each chapter or section of the poem, whether the OE[123] or the PDE[124] edition, is then displayed on the right frame, and next to it there is a differently-coloured table containing a summary and relevant bibliography. As with other reading material on the web, it is a pity that the poem should not be hypertextual, i.e. no links to a glossary, to the same line in the other text edition, to relevant items in the Characters or History sections. In any case, no glossary is available. We can't see why the website was

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entitled "in Hypertext". Another flaw is that the two texts may not be collated, which would have been possible by dividing the right frame into two horizontal ones. The only hypertext in the poem's editions are, in the first place, the hardly-visible note numbers, which hyperlink to the notes section at the bottom of the page, and an icon placed between the text and the notes, which sends the user to the equivalent OE or PDE version, as the case may be. One of the strong points of this website is that the poem's background is made available to the users through some of the items in the History section (particularly "Manuscript" and "Archeology"). The javascript Self Quizz section is still very much unfinished, the only one published dealing with characters in *Beowulf*. Since the site is commercially supported, from time to time browser windows with advertisements annoyingly open up. Finally, an interesting website about *The Wanderer* is Utah Valley State College lecturer R. McDonald's ***The Wanderer Project***[125]. There are images from *The Exeter Book*, a non-hypertextual edition of the poem, five different translations into PDE, and a Glossary, among other pages.

More reliable are the electronic editions offered online by the library servers of several universities. The University of Toronto Library has published poetry edited by members of its Department of English. The website, which can be searched in various ways, is called ***Representative Poetry Online***[126] and the available texts are: *Cædmon's Hymn*[127], *Bede's Death Song*[128], and the *ASPR* edition of *Beowulf*[129] and an interlinear translation by Gummere[130&131].

IV.4. Scholarly electronic online editions

In this section we are going to review some well-designed websites offering high quality editions of OE works.

IV.4.1. *Old English Edition Reader*

In 1993, some years before he created *OEA*, P. Baker designed a scholarly application called ***Old English Edition Reader***[132], containing the full editions of *Wulf and Eadwacer*, *The Wanderer*, *The Battle of Brunanburh* and a partial edition *Beowulf*. It is "a program for displaying and manipulating 'on-line editions' of Old English poetry" and the aim was to "offer readers the ability to construct their own critical versions by providing structured access to variant readings or variant texts".[133] The interface has three sections, one for the text, another for the textual notes, and a third one with information on the line the cursor is on and on whether there exist textual variants of the word the cursor is on. The programme shows a totally edited text: capital letters, punctuations, macrons, editor's corrections and variants. Each text has different sources and readers may swap between them, including their own edition, which is precisely the strong point of the application, for they can enter their own corrections and emendations.

IV.4.2. *The Anglo-Saxon Chronicle* at Georgetown University

T. Jebson's[134] project to publish a critical edition of the ***Anglo-Saxon Chronicle***[135] was started in 1994 but was apparently abandoned early. Of the seven manuscripts only the Parker MS has been tackled.

IV.4.3. *Appolonius of Tyre* at Georgetown University

In 1995 C. Ball, of Georgetown University, published a hypertext edition of Thorpe's edition and translation of the OE ***Appolonius of Tyre***[136&137]. Both text and translation may be viewed simultaneously, not in different frames but by opening another window of the browser and resizing the two of them! Each paragraph has a number —serving as a link to the corresponding paragraph in the translation— and a reference to the corresponding page in Thorpe, and to the page and line number in Goolden's edition[138]. Ball's edition contains no glossary and the text itself is not hypermarked.

IV.4.4. *The Paris Psalter* at Augusta College

Students may read the first fifty psalms of the ***Paris Psalter***[139], together with the Latin original, and consult a glossary, thanks to an online edition prepared by R. Stracke[140], of Augusta State University. Just as in the manuscript, the Latin is shown on the left and the English on the right. The glossary gives the translation into PDE and line references of all instances of the word in the psalms. These references are at the same time links to those instances.

IV.4.5. *Sermo Lupi ad Anglos* at the University of Rochester

University of Rochester M. Berstein[141] started to publish in 1996 a three-framed electronic edition of Wulfstan's ***Sermo Lupi ad Anglos***[142]. The left frame contains the links to all the different sections of the site: help, bibliography, grammatical notes, document comparison, critical edition, notes, translation, analogues in other OE works, glossary and manuscript image. The upper frame contains the text and the lower frame may contain either the translation or the textual notes. Unlike Owen's edition of *The Seafarer*, Bernstein's edition of the sermon is not hypermarked: if one wants to the meaning of a word, the glossary must be consulted independently. The edition contains the versions of the five surviving manuscripts containing the sermon plus a translation, all of which may be combined for comparison thanks to the frame division of the page.

IV.4.6. *The Seafarer*

C. Owen's 1999 thesis (University of Saskatchewan) is a scholarly hypertext edition of ***The Seafarer***[143] and it is certainly worth using by students of Anglo-Saxon literature. It includes a transcription of the manuscript, an edited hypertext version of the poem, another hypertext version with the concordance to the formulaic diction, three renowned translations of the poem, all *The Exeter Book* poetry online, plus critical apparatus and analysis, and bibliography. Owen has made sound use of frames and hypertext, and offers several viewing modes. In the first place, the reading mode, in which the screen is split into frames, the left one for the poem and the right one for the notes and emendations. Some of the words of the poem are in boldtype, which indicates that they are links to the notes and emendations. Glossary consultation while reading is very simple: by positioning the mouse pointer over any one word, basic grammatical and lexical information is given in the bottom message bar. Other viewing modes are the split and the quartered screens, if one chooses to view two or four texts simultaneously.

IV.4.7. *The Wanderer*

T. Romano published in 1999 an online electronic scholarly edition and translation of ***The Wanderer***.[144] This poem is presented in a five-framed javascript page. What makes it different from other screen-split pages is the "synchronized scrolling" feature: the right middle frame shows a picture or copy of the original manuscript and as one moves the mouse pointer from line to line, the transcription in the right upper frame moves too to keep in synchrony with the manuscript, so that it is very easy to compare. It is also the frame where the links in the left upper pane show up: INSTRUCTIONS, PREFACE, INTRODUCTION, the FOUR FOLIOS of *The Exeter Book* containing the poem, the TEXT or edited poem, a CHIASMUS EDITION, a COMMENTARY, a list of the WORKS CONSULTED, and finally a FREE TRANSLATION of the poem. The right bottom frame is for the glossary. Neither the transcription of the manuscript nor the edited poem is hypertextual. So, again, we miss direct links to the glossary from the each word in the text. Also lacking are links to other Web resources.

IV.4.8. Three Homilies by Ælfric at the Oxford University

University of Oxford S.D. Lee[145] published in 1999 an electronic online edition of **Ælfric's Homilies on *Judith*, *Esther*, and *The Maccabees***.[146] This is another excellent scholarly electronic publication, consisting of 16 chapters or sections which can be reached from the index in the left frame and which are shown in the right frame. The critical editions of the homilies are in *pdf* format and must be read with *Acrobat Reader*.

IV.4.9. Wulfstan's *Eschatological Homilies* at Ursinus College

Wulfstan's Eschatological Homilies,[147] another thorough piece of scholarship, was published on the Internet in 2000, by J.T. Lionarons[148]. In the *Introduction* the author says: "This electronic edition of the Old English eschatological homilies is designed to bring together Wulfstan's writings on the last days and his sources in an easily accessible format. It includes newly edited texts and new translations of the five homilies, fully glossed texts of each homily, and transcriptions of the manuscripts in which they are preserved, combined with the Latin and Old English sources and analogues which pertain to Wulfstan's work and a bibliography of primary and secondary materials." The left frame contains an index to all sections of the website. The homilies are shown on the right upper frame and textual notes in the right bottom frame. The left frame links allows users to view the five edited homilies (from MS. Cotton 113) or the transcriptions of all five manuscripts. A very useful feature is that any two texts may be compared, for which purpose a new screen-splitted browser window opens automatically. On each screen side we are given an index of all the homilies and manuscripts, and a PDE translation. The edited homilies are not hypertextual, except for the notes numbers, for again there is no glossary. The site is very well designed and navigation is extremely easy for there exist links everywhere to be able to go straight to any other section.

IV.4.10. *Wulf and Eadwacer* at Western Michigan University

An excellent critical edition of ***Wulf and Eadwacer***[149], published by M.D. Livingston in 2001 within the Old English Online Editions series, is available from the Western Michigan University's Medieval Institute's server. The webpage contains four adjustable frames with hypertextual elements. The upper frame is for the title of the book; the left frame contains an index of the different sections; the middle frame displays the INTRODUCTION, the EDITORIAL PROCEDURES, the MANUSCRIPT[150], the EDITION and the TRANSLATION; the lower frame is for the NOTES about the manuscript and the CRITICAL EDITION, and COMMENTARIES. The GLOSSARY is displayed on an independent browser window. Each line of the edited poem contains two links, one for the textual apparatus and the other for the commentaries.

IV.4.11. *The Seafarer's Voyage* at Wheaton College

The Seafarer, a Voyage Through the Worlds of Medieval England, version 6, is an online electronic book created by A.J. Frantzen and J. Ruffing in 1992, subsequently revised and altered until converted into *html* by M.D.C. Drout and S. Lima in 1998.[151] The book deals with salient aspects of English medieval society and culture in general and as seen in or exemplified by a selection of OE texts. Just like *Beowulf in Hypertext*, this site's forte is the way OE texts are completely contextualized. On entering the site, we are presented with a screen split into four resizable frames. The left top frame contains the links to the site's different modules, i.e. it is the book's table of contents. The modules or chapters are: Book, Labor, Magic, Monastery, Monastic Life, Medicine, Navigation, Penance, Ranks, and Texts. When clicking on a module, the module interface or chapter structure, which is common to all modules except Texts, is displayed in the right bottom frame. This interface is simply a division of each module's sections: Narrative, Lexicon, Links, So What? Images, Bibliography, and Self-Test. By clicking on any of them, they are displayed in the left bottom frame. Narrative is the essay proper, which opens with a short index of the essay. Lexicon is a glossary of the terms specific to that module. Links contains a list of short essays in which the main topic dealt with in Narrative is further developed in connection with particular OE or ME texts and students are given hints for papers. Images and Bibliography contain precisely what is expected. All sections of a module contain hyperlinks to the other sections in the module. The right upper frame is meant for students to take notes. By clicking on it, a new browser window opens up, with a *cgi*-like text-box on which to paste text from *The Seafarer* or simply write, although everything written here must be copied and pasted onto a word processor before leaving *The Seafarer*. The last module or chapter, Texts behaves differently. When clicked on, a new browser window opens up, with an eight-framed page. The page is in fact split into two horizontal halves with four frames in the upper half and another identical four frames in the bottom half. The left upper frame of each half contains the links to each text: Ælfric's *Colloquy*, *The Dream of the Rood*, *Ohþere and Wulfstan*, *Ceolfriþ*, *Scriftboc*, and *Leoftgyþ*. Again, by choosing any one text, some of the relevant text interface items or sections appear in the right lower frame: Sounds of [each text], Prose/Verse Translation, Anglo-Saxon Poetic Records Edition, Latin/Other Sources, Diplomatic Edition, Edition, Commentary, Gateways, Manuscripts, and DDD. The purpose of having the screen split into two halves is, of course, to allow users to read any two sections of the same OE text simultaneously, for example, "Diplomatic Edition" at the top and "Translation" at the bottom.

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V. MANUSCRIPTS

Often students are unaware that the text they are reading in their OE literature class or translating and analyzing in their OE language course is an edited version of Anglo-Saxon manuscript. Since access to manuscript is nearly always impossible, recent developments in manuscript digitilization and their public availability on the Internet have meant a momentous step forward for students and scholars. Some of the above-mentioned scholarly editions do offer images of the original manuscripts, whether partial —such as M. Berstein's edition of *Sermo Lupi ad Anglos*— or complete —such as T. Romano's edition of *The Wanderer*. However, the texts used by students may not have been edited and published on the web. Still, links to relevant websites should be offered to the students in OE CAI. An excellent introduction to the subject of manuscripts together with a downloadable *Excel* database of OE manuscripts by J. Herrington may be found Georgetown University server[152]. As for webpages with links to Anglo-Saxon manuscripts, we shall only mention a few: University of Arizona K. Berkhout's[153] ***Anglo-Saxon Manuscripts***[154], Georgetown University C. Ball's *Old English Pages*[155] webpage ***Texts and Manuscripts***[156], Cambridge University S.D. Keyne's ***Anglo-Saxon Manuscripts*** page[157], D. Tillotson's website ***Medieval Writing — History, Heritage and Data Source***[158], Belmont University J. Byrne's[159] ***Images from Manuscripts***[160].

When translating texts from the Testaments, students should have the opportunity to appreciate the beauty of the illuminations of the ***Lindisfarne Gospels*** (Cotton Nero D.iv)[161]. The British Library website[162] has some images online, and the whole manuscript was recently digitalized and published[163]. What is more, for an OE student these Gospels are also interesting for they may read Aldred's interlinear OE glosses. Another similar electronic edition is ***The Book of Kells CD-ROM***[164], which contains digital images of the 340 folios: the four Gospels, with their Prefaces, Summaries and Canon Tables. *Beowulf*, which is obligatory reading in Anglo-Saxon literature subjects, is also available in a digital format on two CD-ROMs: ***The Electronic Beowulf***, edited by K. Kiernan[165] of the University of Kentucky.[166] It is an image-based edition of the poem in Cotton Vitellius A. xv., with many features for scholarly research: the18th c. Thorkelin transcriptions, copies of the 1815 first edition, two early 19th c. collations of the manuscripts by Conybeare and Madden, a comprehensive glossarial index, a new edition with transcript together with search facilities for both the edition and the transcript, a comprehensive bibliography, a section about the project's history, including many online articles. From the user's point of view, one of the most striking features is the possibility of viewing the manuscript and the edition, or the transcriptions, on one screen, plus the glossary, using any of the various modes available. Again, for students and teachers working with *Christ*, *Guthlac*, *The Phoenix*, *Juliana*, *The Wanderer*, *The Seafarer*, *Widsith*, *Deor* or any of the *Riddles*, University of Melbourne N. Kennedy[167] & B. Muir[168] and have very recently published an electronic CD-ROM edition of ***The Exeter Anthology of Old English Poetry***[169], a web-based multimedia application that has converted

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the paper book into a "virtual manuscript", with a hypertext edition fully cross-referenced to the virtual manuscript, plus audio readings of the poems.[170]

Naturally, apart from CD-ROMs, many websites offer either information on manuscripts or actual digitalized images. The University of Oxford hosts an impressive collection of manuscripts with works in OE, many of which can be viewed online at ***The Early Manuscripts at Oxford University***[171]: the ***Homily on The Invention of the Cross*** (MS. Auct. F. 4. 32), some ***OE glosses*** (MS. Bodl. 572 or 'Codex Oxoniensis Posterior'), the "Cædmon Manuscript' (MS. Junius 11), containing parts of ***Genesis***, ***Exodus*** and ***Daniel***, illustrated with Anglo-Saxon drawings, the ***Life of St. Basil*** (MS. Rawl. Q. e. 20), the ***Preface to the Anglo-Saxon Chronicle*** (MS. Laud Misc. 636, fol. 1r), all at the Bodleian Library; the ***Rule of St. Benedict*** (MS. 197), the OE translation of Bede's ***Historia ecclesiastica gentis Anglorum*** (MS. 279B) at Corpus Christi College; and finally, Ælfric's ***Grammar*** (MS. 154), at St. John's College. Equally interesting is the 11th century ***Anglo-Saxon Glossary*** (MS Brussels, Royal Library 1650), an excellent scholarly study on these marginal glosses published on the Web by D.W. Porter[172] in 1995.[173]

Finally, we would like to mention a stand-alone or web-based application to manipulate or study digitalized manuscripts and palaeography: ***Ductus***[174], developed at the University of Melbourne by N. Kennedy[175] for B. Muir[176]. It is an interactive multimedia program designed to teach the history of western European handwriting. One interesting feature is that transcripts for each line can be viewed by passing the mouse over the line number. Last but not least, we must mention another excellent and useful website: Northwestern University C. Regan's[177] ***Early English Scribal Culture***[178], where students may be instructed online on the Anglo-Saxon scribal procedures and practise transcription of OE manuscripts.

VI. WRITING

As we said above, active skills such as speaking and writing do not make much sense if the language is no longer spoken. However, from a pedagogical point of view or just for sheer pleasure, the active skills may —or perhaps, should— be fostered. Since those able and willing to use Old English for communication are but very few and very distant from one another, it is clear that computer technology can help. The best tool to carry out such communication is a discussion list or group, and one such group does indeed exist, ***The Englisc List***.[179] This list was begun by Memorial University and Georgetown University professors B. Schipper and C. Ball in 1996. The principal aim of the list is pedagogical and practical. As stated in the mainpage of the list's website: "here is an opportunity for you to hone your skills at a challenging medieval language —in a way that more passive, traditional methods of study don't offer— and learn how to teach it." Of course, people willing to participate in such a forum are mainly scholars, for writing in and translating into a *dead* language "is not a simple process, but requires a thorough knowledge of available Old

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English texts and of the contexts for particular words and not just some Old English grammar" (Schipper & Higley, 1996:16). Subscribers to the list are required, among other things, to compose messages or texts in OE, to translate PDE texts into OE, to pose questions about OE grammar and vocabulary. In order to provide contributors with conversational phrases to get started with, C. Ball created a useful webpage called ***Instant Old English***[180], subtitled "A Conversational Phrase Book Culled from the Old English Corpus for the Englisc List".

In 1998 a news service was originated in this forum: ***Tidunga on Englisce*** or ***NASC***[181] (*The New Anglo-Saxon Chronicle*), a monthly announcement of the world's news written in OE, many of whose contributors are members of *The Englisc List*. Since 1999 it has been hosted and maintained by Anthony Appleyard[182].

VII. LISTENING

There are two types of materials available for this skill, theoretical and practical. As far as theory is concerned, there are not many websites specifically devoted to OE phonology. In 2000 Furman University lecturer W.E. Rogers[183] and D. Ervin created a website called ***The History of English Phonemes***[184]. In the mainpage of the site, the authors themselves admit that the "information contained in the site is available in any good textbook on the history of the language", but while "printed texts normally present the information in a linear fashion corresponding to the chronological development of English", this website's value is "the hypertextual treatment of the information, which is meant to keep students from having to spend a great deal of time leafing through textbooks." The site is meant to support undergraduates students enrolled in *History of the English Language* courses. It is a pity that, in order to avoid viewing problems, many users would have to view special phonetic symbols, special combinations have been made up, such at /e</ for /I/, instead of the IPA symbols. The webpage is divided into two screens: the left one contains an index to the different sections of the website and the right one is where the different sections are displayed. Sections relevant for OE CAI are: CONSONANTS, VOWEL AND SOUND CHANGES. The design of the website is very clear and facilitates easy reading, except for the fact that hypertextuality is not taken full advantage of, so that users need to use the back and forth browser buttons. However, the level is very basic, even for an introduction. One particularly pedagogical flaw is that no examples are provided, which is especially noticeable in the Sound Changes section. As for downloadable materials, which is another important facet of CAI —-making notes, lectures and books electronically available to students-— we must mention R. Stevick's[185] online *pdf*-format book, ***The Sounds of Old English***.[186]

With respect to listening practice, the reason for listening to OE is not to be able to carry a conversation, but rather for students to recognize the phonemes studied in their OE or HEL course —which is actually a feature of many of the courses and applications reviewed

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here—, or to appreciate poetry recitation and the way poems were experienced at a time when they were declaimed before an audience. ***Da Engliscan Gesiþas***'s website[187] has a page called ***Readings of Old English Poetry***[188] a collection of OE verse read by S. Pollington: *Deor*, *The Funeral of Scyld Scefing*, and *The Battle of Brunanburh*.[189] Undoubtedly, one of the most popular coursebooks among OE teachers is Mitchell & Robinson's *Guide ...*[190], so it seems natural that someone should have thought of converting some of its texts into soundfiles. P. Baker[191] has done so and created a webpage called ***Readings from A Guide to Old English***[192]. Commercial material is also available: Draca BCS Ltd.[193] has published a multimedia ***OE CD-ROM***, which has a 1000-word picture-sound dictionary, plus grammar, vocabulary and tests.

VIII. DICTIONARIES & GLOSSARIES

Electronic dictionaries are becoming increasingly popular with English language learners because they offer a fast and convenient method of looking up words while working with another computer application, for example writing a composition. According to Laufer & Hill (2000:68), students are often reluctant to consult unfamiliar words in a paper dictionary because of "the time involved in flicking through the dictionary pages and the subsequent disruption of the flow of reading" and they claim that an "electronic dictionary may provide a good solution to this problem". As far as OE is concerned, the sheer wealth of electronic texts available makes it natural that reading should go hand in hand with electronic dictionary and glossary consultation. We believe that is precisely the ease and rapidity characterizing electronic dictionaries that increases the number of word lookups on the part of the students, thereby contributing to "more fluent reading" and to a greater "chance of acquiring the looked up words", as Laufer & Hill (2000:68) put it.

No empirical studies have been carried of OE electronic reading and dictionary consultation which could prove our claim to be right or wrong. However, research conducted with modern languages on the usefulness of electronic dictionaries and glossaries as on-line helping tools and as contributors to text comprehension and incidental vocabulary learning seem to support our belief.[194]

The design of the glossaries and dictionaries should be such as to promote learning. According to Laufer & Hill, 2000:58, "multiple dictionary information reinforces learning" which implies that "a variety of lookup options [should be allowed for] catering to different lookup preferences […] when assigning tasks that involve reading comprehension and understanding of unfamiliar words." It seems undeniable that "the more a learner pays attention to a word's morphophonological, orthographic, prosodic, semantic, and pragmatic features and to intraword and interword relations, the more likely it is that the new lexical information will be retained" and this can only be achieved if the glossary or dictionary provides a "multiplicity of lexical information" (Laufer & Hill, 2000:71). If learners could "select the type of information they consider most appropriate for the task and feel most comfortable with" (Laufer & Hill, 2000:69), learning would indeed be greatly facilitated. This seems to be more important than the number of times a word is looked up.

Now, what is the situation concerning OE electronic glossaries and dictionaries? They do not meet all the requirements of the "optimal dictionary" just depicted: easy, fast, compatible with different lookup preferences. Often, OE glossaries provide very little information about a word: word type, morphology, and some rough PDE equivalents. Admittedly, some scholarly electronic editions of OE words cater for this need through analogues in other OE works. As for OE electronic dictionaries, the only one we know of, ***Wendere***, is available as a rough Microsoft *Access* table. Of course, it is extremely time-consuming to design a glossary that meets these requirements, let alone a whole dictionary.

What are then the resources available to our OE students, whether on CD-ROM downloadable from the web, or online? We cannot but start by mentioning a monumental work: the second electronic version of the ***Oxford English Dictionary* (Second Edition)**, which is available both on CD-ROM[195] and online by subscription[196]. Secondly, B. Schipper's ***Modern to Old English Vocabulary*** may prove useful for it is the only one we know of in which words are sorted by the PDE word.[197] Thirdly, in 1997, K. Jambeck published a very short ***Introductory Glossary and Translation Guide***[198] for OE students using Moore, Knott & Hulbert's *The Elements of Old English*.[199] Fourthly, M. Robbins[200], although he describes himself as "an interested hobbyist in the language"[201], has produced a most handy quick-reference OE-PDE-OE dictionary, which he has entitled ***Wendere***.[202] It is downloadable as a 685 kb *zip*-file[203], which decompresses into a 1.9 Mb file. *Wendere* is in fact a Microsoft *Access* database with over 28,000 entries. The huge advantage of its being a database is that the dictionary may be used from OE to PDE or from PDE to OE and, since it also contains fields for grammar labels, registers may also be sorted by these labels. To perform word lookups, one may use *Access*, both in table or presentation layout, or convert it into an *.asp*-extension webpage so that it may be consulted from a server. Fifthly, University of Pennsylvania S. Crist[204] has made three OE lexical works publicly available on the web[205]: the **glossary of Bright's *Anglo-Saxon* Reader**[206] (pages 241-385 of the text), **Bosworth and Toller's *Anglo-Saxon Dictionary***[207], and **Clark Hall's *A Concise Anglo-Saxon Dictionary***[208]. *Bright's Glossary* is available as a single 572 Kb fully readable *html* file. *Bosworth & Toller's dictionary* is available as 10 *html* files (about 21 Mg) and it is the rough output of an OCR programme, so it needs further processing before it becomes really usable. *Clark Hall's Dictionary* is available only as scanned images which still have not reached the OCR processing stage. We must also mention an online glossary working only from PDE to OE, the ***Present Day English Searchable Glossary for Old English Terms***[209], but its vocabulary is limited to that found in the lessons and exercises in Pollington's *First Steps*.[210] It does not seem to be operative. Finally, an Index of OE names found in OE works is the webpage ***Englisce Naman***[211], which belongs to the website **Folcspræc**[212] developed by Dean Easton[213].

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IX. HISTORY AND NON-LINGUISTIC RESOURCES

The OE language cannot be studied independently of the extant written materials (not only literary works but also other texts of a religious, historical, medical, legal … nature) and artefacts. In order to fully comprehend all these materials, students should also be instructed in what we may simply call "Anglo-Saxon culture", which is precisely what Mitchell (1995) purported to achieve. There are many electronic resources dealing with Anglo-Saxon culture, providing all kind of information which complements an OE Language or Anglo-Saxon literature course. These resources may be online university courses, websites or commercial CD-ROMs. Some are scholarly, while others a simply re-enactment societies' websites or edutainment software.

We shall start by reviewing a few commercial CD-ROMs and then move on to websites. Research Machines PLC and the British Museum have jointly developed ***The Anglo-Saxons: An Exploration of their Art, Literature and Way of Life***.[214] The contents of this CD-ROM —Digging up London, Monks and Nuns, Marvellous Objects, Amazing Animals, Kings and Kingdoms, Anglo-Saxon Writing, Places, Further Study— may be explored by using text, images and there is some voice narration. Images can be enlarged and alternative views can be selected to enable users to see the artefacts in greater detail. Graphyle Publications has published the ***Anglo-Saxons CD-ROM***[215], covering the period prior to the Anglo-Saxon invasion of England through to the death of Alfred at the end of the 9th century. Another commercial CD-ROM containing a huge library of images is ***The Western Civilization CD-ROM***[216], with a subsection entitled "Anglo-Saxon England, 500-1066". It includes software for classroom presentations, but it is also possible to use the images and videos in a *PowerPoint* presentation. Another two titles relevant in an OE course are ***The World of Vikings CD-ROM***[217] and ***1066 and the Norman Conquest CD-ROM***[218]. See also Lee & Fraser (undated webpage).

As for the Internet, we must first mention the online electronic book entitled ***The Seafarer***[219] described above. This is very good example of how "external" and "internal" history of the language may be combined so that students do not lose sight of the close relationship between language and the culture in which that language was used. Another online book, though without the hypertext and frame features of *The Seafarer*, has been edited by S.J. Harris & B.L. Grigsby and is hosted by the Orb (Online Reference Book for Medieval Studies) server: ***Misconceptions about the Middle Ages***[220], which tackles the Crusades, medieval medicine, medieval children, the church and the austerity of the epoch. The ***Online Guide to Anglo-Saxon Culture***[221] mounted by member of the University of Toronto Graduate Department of English is a webpage with links to short online articles about many different aspects of the culture of that period. ***Bede Net***[222] is an academic resource, maintained by S.J. Harris[223] devoted to the works of the venerable monk offering online bibliography of scholarly articles and books. As for King Alfred, Ken Roberts has created a page (text and links) called ***King Alfred the Great***[224]. ***Angulseaxan*** or the Anglo-Saxons Net[225] is an ongoing Web project created by S. Miller[226] to "bring back to life a people […] who turn out to be as vivid and varied as ourselves" (Miller, Mainpage). The "**Coins**" page contains a link to the excellent ***Early Medieval Corpus of Coin Finds***[227] created by the same author but hosted on Cambridge's Fitzwilliam Museum server. The corpus information is stored in a *php* database which may be searched[228] according to various criteria (kingdom, ruler, mint, county). There also exist different options to view and order the results obtained in the search. Those interested in Anglo-Saxon buildings and archaeology and 6th-8th century Northumbrian figures may visit ***Bede's World***[229], which also contains many links to other Bede and Anglo-Saxon sites. Still another website devoted to Bede is R.P. Crisp's[230] ***The Venerable Bede***[231]. Students looking for historical information of the Anglo-Saxon period are also well catered to. If it is maps they want, there's the ***Historical maps and illustrations***[232] webpage, published on the Internet by D. Gibbon for his 1996 *English Dialects and Sociolects* Course.[233] A good ***Anglo-Saxon England map*** by M. White[234] has been put up on the Web by C. Ball[235] and more maps are available online at **Britannia**[236]. As for history, first-hand information may be found at the ***Anglo-Saxon Charters***[237] website, put up on the Web by the British Academy and the Royal Historical Society. This is an excellent scholarly website with a wealth of information and material of interest to specialists. A non-academic site that provides valuable, succinct and useful database information about, among other things, Anglo-Saxon history and culture is ***Britannia's History Department***[238]. Another hypertextual website with basic database historical information is ***History World***[239], with various searching modes. Finally, we must mention a webpage with general but very relevant information and many links: ***Anglo-Saxon Index***[240], by S.D. Keynes, of Cambridge University.

However, not all the websites are academic or scholarly. Some of them were put up on the Web by living-history or re-enactment societies, but often the type the type of information they provide supplements that of more scholarly sites and may thus be used in an OE CAI course. ***Angelcynn***[241] is a society seeking to recreate different aspects of Anglo-Saxon life. It contains non-academic articles on food, crafts, warfare, pastimes, clothing, weaponry, artefacts, etc., with a few graphics and photographs; biographies of kings; an online glossary; an illustrated description of a reconstructed Anglo-Saxon village called West Stow. The site is well-designed for frames allow users not to get lost in it, links to the different sections being always available. However, the articles' text is not hypertextual. ***Regia Anglorum***, Anglo-Saxon, Viking, Norman and British History[242] is another society devoted to the recreation of a cross section of English life around the turn of the first millennium, including the reconstruction of an Anglo-Saxon manor house, Wychurst[243], a Viking settlement, Wichamstow[244], and an earl's manor, Drengham[245]. The Manor of Drengham page contains links to online articles on the Anglo-Saxon legal system, warfare and daily life (food and drink, feasting and fasting, music, games, verse, pastimes). ***Ða Engliscan Gesiþas***[246] is another society, more academic, created 1966 and devoted to the study of the Anglo-Saxon period: language and literature, archaeology, anthropology, architecture, art, religion, mythology, folklore and material culture. It provides a **correspondence course of OE** (by S. Pollington[247]), a **Select Bibliography for Anglo-Saxon Studies** (by C.P. Biggam), information about **Germanic and OE runes** (again by S. Pollington)[248], about the **Firsby Anglo-Saxon Village Project**, audio **recordings of OE poetry** (again by S. Pollington), and a useful **links page**. An obvious matter of interest for students of OE is the ***Sutton Hoo Burial Ship***, to which are devoted many websites, such as the **Sutton Hoo Room**[249] and the **Sutton Hoo WWW Site**[250]. Finally, though not intended for university students and even less so for scholars, some websites deserve to be included here simply as examples of what can be done with computers. All sorts of activities, texts and even javascript games for school students concerning the ***Anglo-Saxons*** and the ***Vikings*** have been mounted on the Web by BBC[251]. Also for secondary school children, there is the ***The History Net website***[252]-[253].

X. CONCLUSION

An OE CAI course should have an index page created by the instructor with a site map or contents index, permanently visible in an frame or at least always accessible from any page of the site. The course should have class materials both in *html* and *pdf* formats —class notes, handouts, complementary materials, bibliography—, all the obligatory primary OE texts, translations, text-specific glossaries and a web-based OE dictionary, online grammar and vocabulary exercises created with some suitable authoring tool, links to materials and resources hosted on other servers and precise instructions on what to do with them —online articles, dictionaries, maps, scholarly edited texts, manuscripts, libraries' catalogues and online material, museums, searching engines—, and Internet or intranet online access to the different CD-ROMS reviewed in this chapter. I totally agree with Roper (1996) in that what undergraduates need is not only, a virtual library such as *The Labyrinth*, but also "something more like the *Perseus* or *De Italia CD-ROM* programs[254], which are essentially encyclopaedias, with very basic information that we, as medievalists, already know —simple, beginner entries on *fin amour*, a book of hours, what a monk is and what a friar is, cross-linked with hypertextual links."[255] Finally, electronic mail should be taken full advantage of, either for instructor-student communication or, by means of a listserver, for general discussion on course and subject matters.[256] Undoubtedly, future hardware and software developments will make it possible to include more unthought-of components. As Foys (1999:20) said and hoped, "the mercurial nature of computer software and hardware development makes it difficult to surmise what the next few years will hold, but I hope that new media beyond straightforward webpages, audio files and JPEG manuscript pages will emerge".

NOTES

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[1] Of course, as we shall see, OE poetry may be recited and listened to, and this could be made available in sound files. Also, the teaching of OE sounds may be enhanced if sound files are used.

[2] There exist today connections stable and fast enough for online training to be perfectly feasible. In Spain, cable, ADSL, RDSI are becoming increasingly affordable and available throughout the country for individuals.

[3] For multimedia authoring tools, readers may visit the *Computer Based Teaching and Learning Sites* webpage (lorien.ncl.ac.uk/ming/resources/cal/mmedia.htm). We would also like to mention a very useful, easy and free tool: the ***Hot Potatoes Suite*** (www.halfbakedsoftware.com/hotpot).

[4] www.wmich.edu/medieval/oen.

[5] We would like to recommend some short introductory manuals to get started in web-browsing: *Web Skills for Language Learning* (www.well.ac.uk/wellproj/wellbook.htm), published by WELL Project (www.well.ac.uk/wellproj/index.html); *How to Do Research on the Internet* (www.lib.monash.edu.au/vl/www/wwwcon.htm), published by Monash University Library; Ball (1996b); Lee & Cooper (2000).

[6] *Labyrinth: Resources for Medieval Studies*. Georgetown University (www.georgetown.edu/labyrinth).

[7] This is what secondary-school teacher Cynthia Miniter does in her webpage *The Hunt for Anglo-Saxon Information - An Internet Treasure Hunt on Anglo-Saxon Period* (www.kn.pacbell.com/wired/fil/pages/huntanglosacy.html).

[8] Available from the listserver ANSAXNET. It is called FLASHCRD SOFTDOS. To download subscription to ANSAX-L is required. Ansaxdat is the list's database: www.mun.ca/Ansaxdat.

[9] Also available from ANSAX-L archives.

[10] O.D. McCrae-Gibson. *Learning Old English. A Progressive Course with Text, Tape and Exercises*. Third edition. Published by the author at 43 Rubislaw Den South, Aberdeen AB2 6BD, 1984.

[11] members.aol.com/libphil.

[12] stella@arts.gla.ac.uk; www.arts.gla.ac.uk/STELLA. A description of the initial stages of the Project appears in Kay & Smith (1990).

[13] Bernstein (1997:27, note 4) defines JavaScript as "a platform-independent scripting language (modified programming language) used to create small programs, or applets, that run from their source code on the Internet instead of from programs, or applications, that you have installed on your personal computer."

[14] alcor.lcc.uma.es/~trivino/calloc.

[15] amiranda@uma.es.

[16] jcalle@uma.es.

[17] trivino@lcc.uma.es.

[18] The version we are reviewing is 4.10.

[19] J.M. de la Cruz. *Iniciación práctica al inglés antiguo*. Madrid: Alhambra, 1986; J.M. de la Cruz & A. Cañete. *Introducción histórica a la lengua inglesa*. Málaga: Ágora, 1995.

[20] Burnley (2000).

[21] www.ruf.rice.edu/~barlow/#soft.

[22] psb6m@virginia.edu.

[23] It may be downloaded as a zip-compressed file from www.engl.virginia.edu/OE/OEA.download/index.html and installed on a personal computer, or else it may be used online from the hosting server itself (www.engl.virginia.edu/OE/OEA/index.html).

[24] Individually downloadable as *pdf* files to be viewed with *Acrobat Reader*.

[25] Once clicked on, the content of the lower frame displays the *Real Player* audio application interface.

[26] Kitao (1995) is of the same opinion, as we saw above.

[27] This option provides information on word class, gender, case, number, person, tense, mood, etc.

[28] This option gives both a general equivalent of the word in PDE and a more specific translation given the context it appears in the text.

[29] www.engl.virginia.edu/OE/OEA.download/index.html.

[30] www.verbix.com/index.html. The same application under the name of ***Conjugue*** is available at loadsoft.narod.ru/education_and_science/languages/review_23490_index.html.

[31] Technical features may be consulted at www.verbix.com/info.asp.

[32] www.unicode.org and home.att.net/%7Ejameskass.

[33] A little javascript application which has caught our attention is ***Count the Mice*** (www.draca.freeserve.co.uk/oenos.htm) designed to learn to count in OE, up to number ten.

[34] cball@gusun.georgetown.edu

[35] www.georgetown.edu/cball/hwaet/hwaet06.html.

[36] *TDOEC*. www.doe.utoronto.ca.

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[37] Each sentence is preceded by a short reference, e.g. "ÆGenPref 105". These short references are hyperlinks to the short title, e.g. "Ælfric, *Preface to Genesis*. Ælfric's Preface to his translation of Genesis, edited by Crawford (1922)", where "Crawford" is yet another link to the full title, that is, "Crawford, S. J., ed. 1922. *The Old English Version of the Heptateuch, Ælfric's Treatise on the Old and New Testament and His Preface to Genesis* EETS OS 160. Reprinted 1969 with additions by N.R. Ker. London: Oxford University Press". For reference method, visit www.georgetown.edu/cball/hwaet/hwaet_texts.html.

[38] www.lonestar.texas.net/~jebbo/learn-as/contents.htm.

[39] www.lonestar.texas.net/~jebbo/learn-oe/contents.htm.

[40] For a brief explanation of the shortfalls he found in Mitchell & Robinson's *Guide*, see the section ABOUT THIS GUIDE at www.lonestar.texas.net/~jebbo/learn-oe/about.htm. The manual's full reference is B. Mitchell & F.C. Robinson. *A Guide to Old English*. London: Blackwell, 1999.

[41] www.wheatoncollege.edu/Faculty/MichaelDrout.html.

[42] db.wheatonma.edu/King_Alfred/start; KingAlfred.net; KingAlfred.wheatoncollege.edu.

[43] See Gray (1999) for a review of the programme.

[44] McGillivray (2001): www.ucalgary.ca/UofC/eduweb/engl401.

[45] www.ucalgary.ca/~mmcgilli.

[46] Only students enrolled in the course have access to the exercise pages through a keyword.

[47] For webpage style, readers are referred to www.webestilo.com/guia/navega.php3.

[48] The course outline is detailed in the SITE INDEX page (www.mirror.org/people/ken.roberts/king.alfred.html).

[49] The texts of the reading assignments can also be reached through the TEXTS mainpage.

[50] www.mirror.org/people/ken.roberts/king.alfred.html.

[51] Servers at the Universities of Rochester, Lethbridge, Florida Southern College, Richard Stockton College of New Jersey, to name but a few.

[52] However, it may happen that some of these hosting servers may restrict access after a public period. Unless the OE CAI site is regularly updated, broken links may prevent activities from being implemented.

[53] Ee_Ong@brown.edu.

[54] www.brown.edu/Departments/Medieval_Studies/lessons.

[55] The author gives his email address (alex@mail.lisgroup.net), but not his name.

[56] amsancho.narod.ru/ex/index.htm.

[57] In the webpage about the project (amsancho.narod.ru/ex/Saxonica/inf.htm), the author acknowledges that the idea of building this sort of encyclopaedia of the Anglo-Saxon world came to him or her while visiting C. Ball's *Hwæt!* course, reviewed above.

[58] Neither of these tools was operative on the day we visited the site (30 Nov 2001).

[59] sharris@english.umass.edu.

[60] www-unix.oit.umass.edu/~bede/exercises.html.

[61] www-unix.oit.umass.edu/~bede/ex/pron.html.

[62] www-unix.oit.umass.edu/~bede/parse.html.

[63] Contrary to the sentences used by Ee-Ing Ong in his *Old English Lessons* or C. Ball's *Hwæt!*.

[64] *ASPR. The Anglo-Saxon Poetic Records* have been encoded in *html* by McCrae-Gibson and are publicly available on the Internet from various servers. Readers are referred to gopher.std.com/obi/Anglo-Saxon/aspr/readme.html for further information on this conversion into an electronic document.

[65] www-unix.oit.umass.edu/~sharris/in/GrammarChart.html.

[66] www.tied.narod.ru/project/grammar/grammar41.html; www.geocities.com/indoeurop/project/grammar/grammar41.html.

[67] cyril@babaev.com; babaev.narod.ru/about.html.

[68] www.elex.amu.edu.pl/~hell/download.html.

[69] www.scar.utoronto.ca/cgi-bin/People?R.+Binnick.

[70] www.scar.utoronto.ca/~binnick/LINC06.

[71] stevickr@u.washington.edu.

[72] www.faculty.washington.edu/stevickr/graphotactics/case_OE. html.

[73] www.google.com.

[74] www.uni-mainz.de/FB/Philologie-II/fb1414/lampert/language_history.

[75] www.beowulf.engl.uky.edu/~kiernan/ENG519/language.htm.

[76] www.ota.ahds.ac.uk.

[77] Also downloadable from the Dictionary of Old English Project (www.doe.utoronto.ca). The corpus is also available online by subscription at the University of Virginia (etext.lib.virginia.edu/oec.html).

[78] ftp.std.com/obi.

[79] ftp.std.com/obi/Anglo-Saxon/aspr/contents.html.

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[80] Both the **Alex Catalogue of Electronic Texts** (www.infomotions.com/alex) and **Eserver** contain just PDE translations of *Beowulf*, as plain text or as a *pdf* document. **Berkeley Digital Library SunSITE**'s **Online Medieval and Classical Library** (sunsite.berkeley.edu/OMACL/Junius) offers online translations of the OE poetry of the Junius Manuscript. A similar site is the **Internet Public Library** (www.ipl.org).

[81] www.georgetown.edu/labyrinth/library/oe/oe.html.

[82] For scholars and researchers in linguistics, history or literary criticism, electronic editions, "lend themselves to sophisticated searches, concordancing, collations, and other forms of text retrieval" (SEENET, 2001). Since scholarly research falls outside the scope of this chapter, we shall merely refer readers to Duggan (1994).

[83] These pop-up comment boxes are precisely one of the outstanding features of *OEA*.

[84] This is precisely one of the most interesting features of Google's toolbar (www.google.com).

[85] See also MLA (1997).

[86] Syracuse University student enrolled in the course *History and Structure of the English Language* (syllabus.syr.edu/ETS/pamoody/ets333).

[87] syllabus.syr.edu/ETS/pamoody/ets333/projects/heroux/poems.htm.

[88] University of Cincinnati student (ahrensht@ucbeh.san.uc.edu.)

[89] asweb.artsci.uc.edu/english/oe/wifes-lament.html.

[90] sps.k12.mo.us/khs/gmeling/oe.htm.

[91] bzahn01@yahoo.com.

[92] loki.stockton.edu/%7Ekinsellt/litresources/brun/brun2.html.

[93] www.nottingham.ac.uk/~aczsjm/wap/angsp.html.

[94] From R. Hamer. *A Choice of Anglo-Saxon Verse*. London: 1970 and M. Alexander. *The Earliest English Poems*. 1966.

[95] www.vercelli.net/vcbook.

[96] www.englishheathenism.homestead.com/oldenglish.html.

[97] www.englishheathenism.homestead.com.

[98] tulip@tip.nl.

[99] www.geocities.com/Athens/Academy/4506.

[100] *The Gospels: Gothic, Anglo-Saxon, Wycliffe and Tyndale versions arranged in parallel columns* 4th ed. London: Gibbings, 1907.

[101] www.sacred-texts.com/index.htm.

[102] www.sacred-texts.com/neu/ascp.

[103] www.sacred-texts.com/neu/north/beowulf.htm.

[104] www.sacred-texts.com/neu/asbeo.htm.

[105] www.airflow.net/maldon/thepoem.html.

[106] www.samizdat.com/britlited.html#1300.

[107] www.chadwyck.co.uk/products.

[108] www.rodrigues.ndirect.co.uk/mainpageframespage.htm.

[109] rliuzza@mailhost.tcs.tulane.edu.

[110] www.tulane.edu/~rliuzza/OE/anotcon.htm.

[111] www.tulane.edu/~rliuzza/407syllabus.htm.

[112] B. Mitchell & F.C. Robinson. *A Guide to Old English*. London: Blackwell, 1999.

[113] jtinkler@towson.edu.

[114] www.towson.edu/~tinkler/prose/prose1.html#oe.

[115] www.engl.virginia.edu/~mss4a/intro.html.

[116] Accessed on 29/11/01.

[117] abruce@flsouthern.edu.

[118] www.flsouthern.edu/eng/abruce/rood/home.htm.

[119] The translator is the site's creator and the text is taken from G.P. Krapp. Ed. *The Vercelli Book*. Anglo-Saxon Poetic Records II. New York: Columbia University Press, 1932. 61-66.

[120] www.humanities.mcmaster.ca/~beowulf/main.html.

[121] ismailri@muss.cis.mcmaster.ca.

[122] ghoshkp@muss.cis.mcmaster.ca.

[123] The authors have used the public domain electronic text of Altman's transcription, obtained via the Online Book Initiative.

[124] The authors have used the public domain electronic text of *Beowulf*. Gummere, F.B. T*rans*., Eliot, C.W. *Ed*. Harvard Classics, Vol. 49. New York: PF Collier & Sons, 1910, obtained via the Online Book Initiative.

[125] www.uvsc.edu/courseinfo/engl/mcdonari/wanderweb.

[126] www.library.utoronto.ca/utel/rp/intro.html.

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[127] www.library.utoronto.ca/utel/rp/poems/caedmon1.html.
[128] www.library.utoronto.ca/utel/rp/poems/bede1.html.
[129] www.library.utoronto.ca/utel/rp/poems/beow_doe.html.
[130] E.V.K. Dobbie. Ed. *Beowulf and Judith.* Anglo-Saxon Poetic Records 4. New York, 1953.
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[132] Available from www.engl.virginia.edu/OE/index.
[133] Baker, 1993:oecdoc.doc file in the software package.
[134] aj@wg.icl.co.uk.
[135] www.georgetown.edu/labyrinth/library/oe/texts/asc/index.html.
[136] B. Thorpe. Ed. and tr. *The Anglo-Saxon Version of the Story of Apollonius of Tyre.* London: John and Arthur Arch, 1834.
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[140] rstracke@aug.edu.
[141] mjbn@uhura.cc.rochester.edu.
[142] www.cif.rochester.edu/~mjbernst/wulfstan.
[143] is2.dal.ca/~caowen/TOC.htm.
[144] www.aimsdata.com/tim/anhaga/edition.htm.
[145] stuart.lee@oucs.ox.ac.uk.
[146] users.ox.ac.uk/~stuart/kings.
[147] webpages.ursinus.edu/jlionarons/wulfstan/wulfstan.html.
[148] jlionarons@ursinus.edu.
[149] www.wmich.edu/medieval/rawl/wulf.
[150] Still not published in Dec 2001. It will be made available when Kennedy & Muir (forthcoming) is finally published.
[151] acunix.wheatonma.edu/mdrout/AllSeafarer/Welcome.html. Cf. www2.wheatoncollege.edu/KACC/LTLC/reports/Drout.html for another description of the project.
[152] www.georgetown.edu/labyrinth/subjects/mss/oe/oldeng.html.
[153] ctb@u.arizona.edu.
[154] www.u.arizona.edu/~ctb/as_mss.html.
[155] www.georgetown.edu/cball/oe/old_english.html.
[156] www.georgetown.edu/cball/oe/images.
[157] www.trin.cam.ac.uk/sdk13/asmss.html.
[158] medievalwriting.50megs.com.
[159] byrnej@mail.belmont.edu.
[160] www.belmont.edu/honorsprogram/ASImages/ASMss.htm.
[161] www.bl.uk/collections/treasures/lindis.html.
[162] www.bl.uk.
[163] Lindisfarne Gospels, The (2000).
[164] www.bookofkells.ie.
[165] kiernan@uky.edu. See Kevin (2000).
[166] It is fully described in the web-based **Guide** (www.uky.edu/~kiernan/eBeowulf/guide.htm) hosted at the University of Kentucky server and also included in the CD-ROM. Shorter descriptions may be found on the servers of the University of Michigan and the British Library (www.press.umich.edu/titles/00260.html and www.bl.uk/collections/treasures/beowulf.html).
[167] www.medieval.unimelb.edu.au/nick.
[168] www.medieval.unimelb.edu.au/bernard.
[169] www.medieval.unimelb.edu.au/exeter and www.unimelb.edu.au/ExtRels/Media/UN/archive/multimediatwo/medievalpoetryincddebut.html.
[170] The CD-ROM version follows the appearance of his fully annotated edition of *The Exeter Anthology,* published in an 825-page, two-volume edition by the University of Exeter Press in 1994.
[171] image.ox.ac.uk.
[172] Porter2524@aol.com.
[173] www.wmich.ed/medieval/rawl/porter1/porter.html.
[174] www.medieval.unimelb.edu.au/ductus.
[175] www.medieval.unimelb.edu.au/nick.
[176] www.medieval.unimelb.edu.au/bernard.

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[177] c-regan@nwu.edu.

[178] www2.mmlc.nwu.edu/english/c-regan.

[179] www.rochester.edu/englisc. The list's archives are hosted at lists.mun.ca/archives/englisc.html.

[180] www.georgetown.edu/cball/englisc/instant-oe.html.

[181] www.buckrogers.demon.co.uk/nasc.htm. The NASC was formerly maintained by M. van der Hoek at amsancho.narod.ru/ex/NASC/index.htm.

[182] anthony.appleyard@umist.ac.uk.

[183] bill.rogers@furman.edu

[184] www.furman.edu/~wrogers/phonemes.

[185] stevickr@u.washington.edu.

[186] Stevick (1999): www.hcu.ox.ac.uk/toebi/sounds/sounds.html.

[187] www.kami.demon.co.uk/gesithas/index.html.

[188] www.kami.demon.co.uk/gesithas/readings/readings.html.

[189] *Real Player 3* is needed.

[190] B. Mitchell & F.C. Robinson. *A Guide to Old English*. London: Blackwell, 1999.

[191] psb6m@virginia.edu.

[192] www.engl.virginia.edu/OE//Guide.Readings//Guide.Readings.html. These are *wav* files which can be reproduced with *Windows Media Player*.

[193] www.draca.freeserve.co.uk/oecd.htm.

[194] Cf. Lomicka (1998) and Laufer & Hill (2000), two well-documented reviews of current research on this topic.

[195] OED2.

[196] www.oed.com.

[197] www.mun.ca/Ansaxdat/vocab/wordlist.html.

[198] vax.wcsu.edu/~jambeck/glossary/warning.html.

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[213] deaneaston@yahoo.com.

[214] *Anglo-Saxons, The* (199?). Available from the CD-ROM Shop (www.cdromshop.com/cdr/desc/p.A0145.html) and from *WAE* (www.wae.com/cat/history.php#CD-ANGLO). Mainly for school students but usable for higher education.

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[217] *World of Vikings CD-ROM, The* (2001). Publishers website: www.pastfwrd.demon.co.uk/vikings/index.html. Also distributed by Graphyle (www.graphyle.com/Publications/vikings.htm).

[218] *1066 and the Norman Conquest CD-ROM* (2001). See dspace.dial.pipex.com/jazzitoria/norman.htm. Publishers website: members.tripod.com/lynboxell/index.html.

[219] acunix.wheatonma.edu/mdrout/AllSeafarer/Welcome.html.

[220] orb.rhodes.edu/non_spec/missteps/Intro.html.

[221] www.chass.utoronto.ca/~cpercy/courses/1001Encyclopedia.htm.

[222] www.geocities.com/~jarrow.

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[225] www.anglo-saxons.net.
[226] sean@denmead.cc.
[227] www.fitzmuseum.cam.ac.uk/emc.
[228] www.fitzmuseum.cam.ac.uk/Coins/search.php.
[229] www.bedesworld.co.uk.
[230] crisp.23@osu.edu.
[231] www.cohums.ohio-state.edu/history/people/crisp.23/bede.htm.
[232] From Jacek (1995).
[233] coral.lili.uni-bielefeld.de/Classes/Winter96/Dialects/dialects/node33.html.
[234] mwhite28@richmond.infi.net.
[235] www.georgetown.edu/cball/oe/oe-map.html.
[236] www.britannia.com/history/histmaps.html.
[237] www.trin.cam.ac.uk/chartwww.
[238] www.britannia.com/history.
[239] www.historyworld.net.
[240] www.trin.cam.ac.uk/sdk13/asindex.html.
[241] www.angelcynn.org.uk.
[242] www.regia.org/index.html.
[243] www.regia.org/Wychurst%20Project.htm.
[244] www.regia.org/village.htm.
[245] www.regia.org/drengham.htm.
[246] www.kami.demon.co.uk/gesithas.
[247] stevep@saxnot.demon.co.uk.
[248] There's another webpage with the runes at www.georgetown.edu/labyrinth/library/oe/texts/runes.html.
[249] csis.pace.edu/grendel/projs4a/sutton.htm.
[250] www.suttonhoo.org.
[251] www.bbc.co.uk/education/anglosaxons/index.shtml and www.bbc.co.uk/education/vikings/index.shtml.
[252] ancienthistory.about.com.
[253] See also ***A Guide to Web Sites with Anglo-Saxon Images***, by J.P. Byrne et al., (www.belmont.edu/honorsprogram/ASImages/ASHome.htm), accessed on 24 Dec 2001.
[254] www.perseus.tufts.edu.
[255] Which is precisely what *The Seafarer, A Voyage* ... offers.
[256] Such as K. Kiernan, of the University of Kentucky, has created for the students enrolled in his Introduction to Old English and Literature course (beowulf.engl.uky.edu/~kiernan/ENG519/listserv.htm).

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New Technologies and Genre Variation. Printed and Electronic Documents in Tertiary Education ESP[1] Courses

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ABSTRACT

New technologies are as present nowadays in university as they are in society in general, influencing all aspects of the teaching-learning dynamics. Within this electronic environment new genre types have arisen which should be as familiar to students as computers themselves. In this chapter the impact of technologies on genre variation is discussed, especially in relation to authentic material as teaching support. This influence is shown in a specific ESP area, that of English for Library and Information Science (LIS), examining the possibilities, based on the relationship between older and newer genres, that are brought into the classroom. An example of changes brought about by Information Technologies on a classroom project is given: this now involves using web sites as a resource for the construction of leaflets. Following this, some advantages derived from its implementation during two academic years are discussed. The conclusions point to the benefit that new genre exploration in the ESP classroom offers for the building of academic literacy at tertiary level.

KEYWORDS: Genres, new technologies, ESP methodology, tertiary education, English for Library and Information Science (LIS).

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I. NEW TECHNOLOGIES AND CHANGING GENRES

This paper focuses on the possibilities that the combination of genre approaches and new technologies brings into the classroom..

The concept of genre is not new, although it has been used in many areas and with many senses. Here genre is located at a discourse level, and related to the concepts of *discourse community* and *communicative purpose* (Swales, 1990; Bhatia, 1993), *socio-cultural context* (Berkenkotter & Huckin 1995; Huckin, 1997) *cognitive context* (Paltridge, 1994; 1995; 1997) and *conventions* (Bazerman, 2000). What differentiates genre from text type is the inclusion of parameters *external* to the text itself, but strongly determining it (Biber, 1988; 1989). The most immediate parameters are the sender, the receiver or addressee, the channel, and the purpose of communication. In other words, in order to be regarded as a genre instance, a text may not be studied without locating it in the actual context in which it is used.

On the other hand, the dynamic nature of genre, subject to changes like contexts themselves, leads Trosborg (2000: viii) to state: "Genres and genre knowledge can be more sharply and richly defined to the extent that they are localised (in both time and space)". She also points to the fact of new genres arising as a result of new technologies (*ibid.*). Some of the contributions included in Trosborg (2000) are aimed at showing the dynamic nature of genres, as reflected in genre variation, and a vivid example is the one provided in Myers' paper about the changes taking place in the genre *academic lecture*, with the introduction of *Powerpoint* in the classroom (Myers, 2000). These changes affect the structuring of presentations —which, rather than appearing in a sequential order, now appear as hierarchies—, and the proper interaction audience-lecturer, as the text partially substitutes the lecturer's voice, diverting the audience's attention away from the lecturer. This way, instead of being transmitted via an authoritarian monologue, knowledge is transmitted through a finer rhetoric of persuasion. Having said that, Myers nevertheless observes that, even if *Powerpoint* brings substantial changes into classroom dynamics, and into the lecture genre itself, it is still the lecturer who decides how deeply it will be used, and for what purposes: "Things seem to have power —the computer, the lecture room, the notebooks. But they do not act apart from human strategies". (*ibid*: 187)

It is this idea of genres changing and even being replaced by others, but also depending on the use that is made of them, that guides the present paper. As Myers points out later "We both use genres and are channelled by them; that is the tension that must guide any of our analyses, whether of corporate annual reports, handbooks, e-mail, newspapers, or leaflets. Change comes, not from the inside or outside, but in that tension". (*ibid.*: 188)

The rest of this article is aimed at describing how new technologies have influenced the appearance of new genres or the changes in existing ones, especially in the ESP classroom (if there exists any EFL[2] classroom where purposes are not specific, as Alcaraz 2000 argues). As an illustration of this, a project carried out in English for Information Science is presented; this project involves the use of leaflets and web pages as two related genres, which represent somehow this tension between the conventional, printed message and the new, emerging, electronic one, which may replace or just complement it —we still do not know. What we do know is that every time our students have the chance to choose between an electronic document and a traditional one in order to carry out the same task, they are increasingly inclined to use the former, being more familiar with this type of support than many of us have ever been. Taking this into account, the usefulness of the tasks presented is evaluated through the comparison of some of the outcomes from this and previous years, when a more traditional approach, implying real visits to information centres instead of virtual ones, was used.

II. NEW TECHNOLOGIES AND ESP/ EAP TEACHING

The number of descriptions of ESP/ English for Academic Purposes (EAP) classroom approaches involving new technologies has steadily grown in the different EFL conferences and journals over the last few decades. In the Spanish Association of Applied Linguistics (AESLA) Conference held in 1987 on the topic of *English for Specific Purposes*, Civera Coloma and Pastor Abellán (1987) made claims about the benefits of introducing computers into language teaching, and on the interdisciplinary role they play. Of course, there is nowadays an area of research standing on its own — Computer Assisted Language Learning; CALL for short— which has developed specifically around the use of computers in language learning in general, and especially in English language teaching (see Chapelle, 2001). This is a weak CALL approach, in the sense that technology is considered mainly as a *tool* to facilitate learning, providing authentic material on which to work, rather than as the environment through which the whole learning process takes place, as it is often done in computer assisted instruction.

The first works written in Spain about the use of technologies in tertiary level English language teaching, especially in English for Science and Technology (EST), tend to give general ideas to be developed by using applications present in certain programmes, although the Internet in general, and all of its possibilities, is replacing older, specifically designed software. Bolaños Medina (1996), for instance, considers the Internet as a means for EST students to establish connections and exchange results. Pérez-Llantada Auría and Plo Alastrué (1998) analyse some outstanding features of emerging genres used in the academic world and framed within the Internet, namely *Discussion Lists*, *Electronic Bulletin Boards*, *Electronic mail (or e-mail)*, and *web pages* or *WWW*. Needless to say, these genres are not exclusive to the academic world, although they are increasingly present in it, replacing little by little related genres in traditional support used for communication, or for information searches and exchanges.

Some of the aforementioned features are facilitated by the use of a different channel, such as the occurrence of specific rhetorical patterns; most ones, such as syntactic simplification and the creation of a new language, are due to the fact that this language is closer to oral one, which means a relaxation in terms of formality or rigidity: "[...] the language used in this particular context becomes so distended, friendly and relaxed that it resembles to a great extent the patterns of oral conversation" (*ibid.*: 84). The clearest example of this relaxation can probably be found in postings to professional discussion lists, whose features as a new electronic genre, or *cybergenre*, are described in Luzón Marco (2001a).

Seiz Ortiz and Carrió Pastor (2001) examine the advantages the Internet provides for communicative, learner-centred, task-based approaches, and stress its role as a learning environment which favours holistic approaches, resembling the natural methods of learning. The *WWW*, as a learning environment, is characterised through five variables —student, instructor, content, channel and context— and the conditions and advantages for each variable are enumerated. Two key words or phrases in this and other works are *flexibility* and *freedom to choose*. The students' level of autonomy is enhanced, and the teacher's role becomes less salient with the presence of other *"learning supports"*. The authors also stress the fact that language is learnt as it is used, and on the centrality of 'learning to learn' through the fulfilling of tasks, performed in a significant, natural or *authentic* environment.

Many recent works provide ideas or experiences with different digital genres in Spanish tertiary education CALL applications. For instance, Giménez (2000) focuses on e-mail in business communication for Business Studies, Luzón Marco (2001b) explores the usefulness of *OWLs* (Online Writing Labs) in the teaching of Technical English for Engineering, and in Bolaños Medina and Máñez Rodríguez (2001) different Internet tools are combined for group work in translation activities, reproducing the current translator's information searching procedures for the translation of web pages. Similarly, Barahona i Fuentes and Arnó (2001) describe a virtual EAP course within the *Intercampus* virtual learning programme settled in Catalonian universities. The course involves working with web pages as raw material, and this contribution includes some very useful URLs[3], especially for the teaching of writing. In the same volume, Sanz Gil and Serra Escorihuela (2001) show how to use hypermedia in learning to read scientific genres, and Coll García and Campoy Cubillo (2001) deal with possible interactive Internet applications in the classroom, developed in the context of EAP for Chemical Engineering. They also make suggestions for using archival applications and designing web sites with chemistry links, with varying degrees of autonomy. The instructor's role is still invaluable, nevertheless, for determining the match between task difficulty and student proficiency level: "It will be the task of the instructor to bridge the gap between the raw material and the aim of the activity through the adequate design of problem-solving tasks that challenge students intellectually and provide meaningful opportunities for language reception and production" (*ibid.*: 248).

After having revised some of the potentialities that Information Technologies (IT) offer for higher education foreign language instruction, some caveats are still present: to which point can all this change classroom dynamics? Are we facing a new learning paradigm? Seiz Ortiz and Carrió Pastor (2001) pose a similar question: "does this resource provide any actual pedagogical innovation?" They leave the question open-ended, but they suggest that having lots of data available through the Internet does not necessarily mean a methodological revolution. WWW is, as they suggest, a *powerful tool* to enhance some aspects which are present in already existing theories: it allows us to put into practice in a quick and relatively easy way some of the principles inherent to communicative methodology and task-oriented approaches.

A further and related issue is that of autonomy: Sanz Gil and Serra Escorihuela (2001: 357-358) make a distinction between real tool manipulation and learning autonomy, as the former does not imply the latter: "Freedom to move within the hypermedia system does not necessarily mean being able to use it appropriately" (translated). If this is something not to forget when teaching English in general, in the case of *English for LIS*, students may be more familiarised with new technologies — sometimes even more than the instructor — so they can achieve a good level of autonomy in the use of these resources, generally feeling highly motivated to do so. Nevertheless, there is a danger, namely that of forgetting they are still learners, so we may overvalue their capabilities, especially when they have to guide themselves through the English language.

In the study described below, most students are considered as beginners, or false beginners, in many senses. As they are in the first semester of the first year, they are beginning to live a university life, and thus becoming autonomous in some respects; they are becoming immersed in higher education, a world that, in many cases, was completely unknown to them some months before, not only with respect to the topics studied, but even to the general academic dynamics; many of them — although this 'many' is little by little turning into 'some'— are not familiar enough with IT, even if they will specialise in it in a very short time and show a positive attitude towards it, as previously said. With respect to the English language, most of them are not so competent as could be expected after an average of eight years of instruction, being in general at a low-intermediate level, with certain heterogeneity with respect to skills and abilities.

It is therefore advisable to take a gradual approach, which helps students to depart from familiar practices and develop their abilities in the aforementioned respects. A useful way to accomplish this is by relating more traditional topics and practices to newer, computer-assisted ones, traditional genre types to digital ones, and general English language to a specific one, concerning particular topics and environments. The comparison of printed and related digital genres as described here, also brings up an awareness of genre dynamics, and a students' competence in genre recognition and understanding or genre *readiness* (Swales, 2001), something essential for the building of their academic literacy.

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III. COMMUNITY INFORMATION SERVICES WEB PAGES AND PRINTED LEAFLETS AS RELATED GENRES

In the field of Information Science some attempts have been made to analyse new genres, commonly used for carrying out LIS tasks. Dillon and Gushrowski (2000) for instance, establish the characteristics of what they consider as the first uniquely digital genre, the personal home page. Their work shows that genre conventions are something which exist, and in this particular case, have been adopted very rapidly among the discourse community that uses them.

In Johnsen (2000) there is also an attempt to analyse online technical documentation, focusing on the role played by textual arrangement as a means of achieving perceptual cohesion, and in relation to the rhetorical clustering typical of the genre.

These are examples of a growing interest among discourse analysts on the one hand, and information specialists on the other, to obtain systematic descriptions of the emerging genres used in the IT field, as both poles of the information process — document producers and document addressees or users— need to share these standardised conventions for better mutual understanding. Similar concern has arisen among public document designers, especially since electronic publications have started to replace printed ones, with a need to ensure these documents are effective as a communication bridge between governments and society: see Janssen & Neutelings (2001), for instance, for linguistic descriptions of several types of Dutch public writing, such as brochures or parliamentary papers.

The genre instances used in the present description are *information services web pages* and *printed leaflets*. Below is a brief description of both genres according to their situational and contextual parameters, or genre defining characteristics, partly following Paltridge (1995; 1997): *Audience*: both genres are addressed to potential information services users, *i.e.* the community where the service — library, museum, etc. — is located; this can be the general population living in the area, or a given subgroup, for specific sections or services. There is a difference, though, in the case of web pages, as their digital nature makes them available to the whole world, so we can affirm that the number of potential visitors, and virtual ones in many cases, has been extended to anyone interested in the service, which may affect both linguistic style and content selection.

Writer: it has been often the central staff, depending on its level of importance, that has chosen the design and content of the leaflet, although in most cases it has been manufactured by printers or editors paid by the government or institution in charge. In the case of web pages, the decisions on content arrangement and style are increasingly taken by web designers, as this requires even more sophisticated and technical knowledge.

Channel: in the case of leaflets, the channel is the printed one, while web pages are digital. A big difference is that the digital channel permits, in many cases, to actually visit —

virtually— the centre as you enter the page, so the 'invitation to go or to make a better use of the services' turns into an 'invitation to read and move down the cursor'.

Setting: leaflets are designed and distributed mainly in the centres to which they refer, as small guides. They can also be found in information or administrative points or offices belonging to the same area of influence, depending on the type of centre. In the case of web pages, the way to get to them is as varied as the reasons users may have for viewing them. It may be the case that they come across them by chance, when looking for something else, etc. An interesting difference in relation to the setting is the possibility of moving around related links in the case of web pages, so the information can be contrasted or complemented instantly. The role played by staff in physical centres, as providers of further guiding and information, is passed via the sometimes unlimited link possibilities, with the added fact that most times staff or experts' e-mails are also provided, in case the 'visitor' wants to address them personally.

Communicative purpose: the main aim of both genres is to inform potential users about the centre's services, contents, arrangement, location, etc., and, in most cases, to persuade/ invite them to make full use of its resources. This persuasive function is present in varying degrees, and possibly more in the case of museums and leisure centres, where visits are optional and depend on personal arbitrary decisions. In specialised centres, where more factual or technical information is offered, they are usually a means to guide users so they can obtain the information required. It may be easier, nonetheless, to entice users who come across these pages when navigating on the web, to enter, via an attractive, appealing design. The communicative purpose in the case of web pages can range from providing information about the centre's content to, as was said before, actually showing it (virtually), so the user can immediately access the stock, or, at least, the stock's most relevant data.

The main situational features just described will determine the textual and linguistic characteristics conforming both genre prototypes. Presentation, description and evaluation of discursive elements are to be expected, together with rhetorical functions of information and persuasion, as well as specific language connected to the centres and their reality. Stylistic features will tend to evoke in an attractive way some of the resources offered, and the devices used will vary depending on the channel. Accompanying the text, leaflets usually include photographs or drawings allusive to the most salient stock, or even maps with the centre's location. In the case of web pages, the visitor may find a comprehensive, virtual walk through the existing stock in two dimensions, or, at least, the possibility of all types of input — animations, sounds, etc. — besides the main information in HTML[4] or similar languages. Figure 1 summarises the situational parameters, related to their communicative function, differences ranging mainly from the change from printed to digital form.

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	LEAFLET	WEB PAGE
Audience	Direct users, potential consumers living in the info. Service area	People living in the area; web site "visitors"
Writer	Institution staff + editors, printers	Institution staff + web site designers
Channel	Printed document, conventional format (two-fold)	Digital
Setting	Area where the centre is located, centre itself	Digital context, connections to other links with related services or topics
Purpose	To inform users about the services (to invite users to make full use of them, or to contact them)	To inform users about the services and related ones, to *show* the services (virtual visits), or the stock's most relevant data.

Fig. 1. Situational parameters of Information services leaflets and web pages.

IV. DESCRIPTION OF A CLASSROOM PROJECT IN ENGLISH FOR INFORMATION SCIENCE WHICH INVOLVES THE USE OF LEAFLETS AND WEB PAGES OR, HOW THE PRESENCE OF NEW TECHNOLOGIES CAN AFFECT METHODOLOGICAL DECISIONS

Although other projects have been carried out in English for Information Science at the University of Murcia using specific genre types[5], digital genres had not been used so much until now in the English classroom, as students already spend a good percentage of workshops in other subjects in the computer labs, especially from the second year on. The students' growing tendency to refer to the Internet indeed triggered the changes in the methodological design that will be described next.

IV.1. The Previous 'Traditional' Project: Visiting an Information Centre

In previous LIS curricula, students used to have at least one writing project in the English subjects, which in the first year was organised in the following way:

- After being introduced in other subjects to the concept of *Information chain, i.e.*, information gathering, selection, processing, spreading, and use, during the first month of the academic year, students were given a set of instructions in order to write a description of an Information Centre.
- Groups of up to four had to be decided — although they were given the chance to work individually— and they had to choose an Information Centre, among the types provided in a list. The centre types to choose were changed from year to year, in order to have some variation over time, some of them being libraries, museums, archives and different

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information centres present in social institutions, such as health centres, mass media, governments, youth information centres, etc.

- Once students had decided which centre to visit — by the middle of November— they had to prepare a checklist about what they expected to find in the centre in relation to the whole, or to a part, of the information chain.
- Students went to the centre and tried to complete this checklist or else complement it by *observing* every aspect in it, talking to the staff, etc.
- Once they had this information, they had to write a report describing the centre and making conclusions about what this task had meant to them, in terms of knowledge acquired, etc.. the deadline for the written work submission was the week before the Easter holidays.

For the evaluation, Hamp-Lyons' formative feedback profile for writing assignments was used — in Hamp-Lyons and Heasley (1987: 146) — adjusting it to the desirable competence level, and the specific area of Information Science, especially in terms of vocabulary. This way, the degree of competence at every discourse level, from successful communication of ideas and their arrangement, to spelling and orthography, was evaluated.

At the same time, this task had as its main purpose to ensure that students could properly use the English language to complete a project directly related to their speciality, so they also had the chance to apply knowledge acquired in other subjects, namely *Document Analysis, General Information Science -systems, networks and centres-* and *General Librarianship*. Some of them even dared to evaluate the centres as information units, although this was not required at this stage.

For a number of years, especially when English was implemented annually, this task worked well, and students felt at ease upon its completion, generally admitting, in their conclusions and other feedback, that it had been a rewarding experience, and a good way to learn English in a holistic way, though analytical procedures were used in the classroom as well. It seemed especially motivating for them to be able to choose a centre and visit it on their own, after having made other guided visits within other subject programmes. In addition, time constraints were not too narrow, so they could normally complete and submit their output within the deadline. The whole process took place over a period of six months, approximately between October and March.

IV.2. The Need for Change

Usually, changes are accompanied by further changes, and something of this kind happened in our centre, as many circumstances were different after several years. Technologies that used to represent a menace for students, with few laboratories to use and just *Word Perfect* and a few databases to practice on, became more sophisticated and user-friendly, and the possibility to access the Internet was more and more real. Having a building for the first time just for *LIS* and related degrees meant more facilities, a bigger number of computer terminals, and more time available to use computers freely, either in the labs or in the *ALAs*[6] (free access computer rooms).

At the same time, there were changes in the curriculum, which meant a shortening in the length of courses, so many of those which had been implemented annually now lasted just one semester (15 weeks). Added to that, the English subjects, which before had been assigned 30 total compulsory credits, now had just 16 of optional nature for the whole degree, which meant that the content had to be more superficial. An immediate consequence of these changes was that students did not have as much time to carry out the writing assignment over time, as in the previous scheme they normally completed it by Easter. The writing project as such was abandoned, and shorter activities were developed instead.

During the academic year 2000-2001, the curricula had some minor changes again, and English subjects recovered some credits, the first year course being compulsory again, and having 7 credits. The writing assignment based on the visit to an Information Centre was reintroduced in the syllabus, but this time the outcomes were very different; possibly because of time pressure, students did not pay as much attention to the message form, and the projects did not reach the same standards as before.

Students showed a tendency to choose, whenever it was possible, the centres they had already been to during other subjects' visits; this would not have been so bad had it not been for the fact that they also tended to download those centres' web pages (that had not previously existed) and in some cases, when they happened to find the information in English, even to print it as such without altering a comma! Of course, they were so proud of their success in finding URLs and even of collaborating on their diffusion, that they were not really aware that in some cases their work was expected to be as original as possible. It became clear that there was not either enough time to properly develop the project, or enough motivation, which was moving towards making good use of the new technological resources and potentials available.

IV.3. The Current Situation

During the first semester of the academic year 2000-2001 a new project, based on the previous one, but within a CALL environment, was started. It has been implemented again during the academic year 2001-2002. Its ultimate goal is the elaboration of a leaflet about information centre services, and the procedure is the following:

- *Analysis of leaflets about library services:* Students are firstly exposed to different types of leaflets about different library services in a British library network: Devon County Council Libraries. Having already worked on and read one of these leaflets in a normal class, they analyse in one of the workshops or practice sessions at least four of these leaflets as genre instances, paying attention to the relation between pragmatic purpose (*for what* the text has been produced), audience (*to whom* it is directed), content (*what* it is about, *what types of information* it contains), and the language (*how* it has been designed and written, including verbal and non verbal language). A group discussion follows in which these relations are commented on, and further highlighted. The teacher's role in this session is mainly that of a moderator, checking that every ten minutes a different leaflet is being analysed in each group, assuring that all of them examine a variety of samples, and helping to collect group conclusions in a final, general conclusion. This takes place at the end of October / beginning of November.
- *Visiting a virtual information centre*: in another practice session, this time at the computer lab, students, either in pairs or alone, select a web site belonging to a given type of information centre (this and last year they have been museums) in any English speaking country, with the help of a search engine. Once the page has been chosen their work consists on selecting the information they will use, having completed the necessary changes, to design a leaflet on the same services. The instructor's role is mainly that of an advisor, helping firstly to choose the adequate search engine and searching terms, and secondly ensuring that the page selected has enough information to work on. This is done in the first week of December, before starting a section devoted to Museums, so it serves as an introduction to this topic area.
- *Designing of the leaflet with selected information*: lastly, for the production of the leaflet, students combine their knowledge of desk-top publishing with their target-language linguistic skills to produce a leaflet which contains the conventional genre features already highlighted. It is mainly, but not entirely, a rewriting exercise, in which summarising and information rearrangement can be complemented with design and document production techniques with the help of computer applications, and in which creativity also plays an important role. The deadline for handing in these leaflets is the week before the Christmas holidays.

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IV.4. Discussion

Some differences must necessarily result from the contrast between the prior projects and the current one, and other positive points can simply be inferred in relation to the new curriculum.

- From a comparative angle, the *time spent* visiting the centre before was more than the time required to find and visit a site, which is important taking into account that time constraints in the new curriculum are higher. All steps can now be fulfilled without leaving the centre, and within the hours established for the English subject.
- With respect to the tasks' *design*, there is a change from emphasis on writing from scratch to selecting and summarising information —or rewriting— which may be also more realistic for a semester subject, and for mixed-ability groups, as group negotiations are to be done in relation to already-existing material.
- A further advantage in relation to students' performance is the elimination of risks and temptations of either writing in Spanish and then translating into the target language —something occasionally done in the case of the first project— or else downloading the whole content in English and printing it.
- Higher attention is paid to document design, idea arrangement and appropriate language use, and the result is a more genre-oriented activity. Connections between linguistic form, communicative function, and other contextual parameters are explicitly present during the whole process, apart from the benefit of relating and manipulating different genre types in order to achieve discourse competence which, in turn, constitutes a key element for professional expertise (Bhatia, 2001).
- The current project shows a higher level of integration within the syllabus, acting as a link between previous units, with respect to genre conventions, and subsequent ones, concerning the topics dealt with, so the whole presents a more complete appearance.
- As for the current project itself, the combination of tasks seems to be motivating in general, as it allows students to practise a number of different skills even more akin to their specialisation: finding information online, selecting adequate sources, extracting relevant information and preparing a "secondary" or "tertiary" document for a given addressee, are all practices required of an information manager. Even if the previous project was linked to the documentary chain, mainly by observing and describing, in this case students immerse themselves in this chain, with the help of technology.
- A glance at the real or virtual visits carried out and listed in the appendix for the last three academic years, allows us to form further conclusions about the benefits of this change:
  - Even if it is good for students to apply their specialised incipient knowledge in observing the immediate context, mostly in the regions of Murcia and Alicante, by using the "here and now" principle, this can be done even unconsciously when doing some other activity in daily life or as part of other subjects' requirements.

But what the Internet really provides is a much more flexible concept of the "here and now", and the possibility of visiting far away centres should indeed help students to develop a more flexible attitude towards other cultures and realities, and to be aware of other library and information practices.

- The possibility of choosing from a nearly unlimited number of target centres adds interest to the tasks, which students can adjust to their particular interests or tastes to a certain degree.
- The work's external conditions have served to improve it, and the use of computer support seems to influence the number of members per group, as reflected in the appendix. This decrease might finally result in higher effort and involvement by each of the group's or pair's components.

V. CONCLUSIONS

This article has attempted to demonstrate the benefits of CALL approaches for ESP tasks design, and the advantages that can be brought up through the contrast between older and newer genres, or, to put it in a more appropriate way, between printed support informative documents and digital ones.

The projects carried out before and the last two years cannot be compared in terms of linguistic output, as they do not require the fulfilment of same tasks, nor do they have the same constraints; but both share the idea of using the English language as a vehicle for communication (Williams, 1994), in a rather authentic way, possibly more so in the second case.

The growing pervasiveness of digital genres has been exposed through an example of how syllabus design can be altered in order to adjust to new curricular and social demands. Helping students to attain digital literacy is becoming a must in digital societies, but especially in Information Science (Bawden, 2001: 242).

On the other hand, in the project described here, the Internet is no more and no less than a powerful provider of updated *materials*, which students themselves have to find, select and exploit in order to carry out their tasks. It can replace much of the printed material needed before as classroom material, on which students have to apply their knowledge. Likewise, material provision, previously pertaining to the teacher's realm, is now part of the procedure which can also be *evaluated*.

The advantages of using project approaches like the one described, which bring digital genres into the ESP classroom and relate them to printed ones, can be summarised as follows:

- Computer/ Internet literacy is enhanced among students in the first year;

- Traditional and newer supports are linked, and through this contrast students are also sensitised towards genre characteristics and genre variations (relationship between form and content);
- Motivation is increased by introducing authenticity into materials and tasks, giving students the chance to practice some of the skills required in their future professions;
- Projects like this, and CALL approaches in general, allow the integration of some of the skills practised in the English classroom and in content subjects. In this particular case, the 'information chain' is recreated in the classroom, using computers as a tool, and English as the medium.

NOTES

1. English for Specific Purposes
2. English as a Foreign Language
3. Universal Resource Locators, or "addresses"
4. HyperText Markup Language
5. In Fernández Toledo (1997) a project involving writing book reviews is described.
6. Aulas de Libre Acceso.

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APPENDIX: **Museums visited in the academic year 1999-2000, and virtual visits to museum pages carried out in the years 2000-2001, 2001-2002**

Academic year 1999-2000 "real" visits

TITLES / CENTRES	GROUPS	Number of components
Murcia Regional Library	6	5 groups: 4 comp. 1 individual
Simancas General Archives (Valladolid)	1	4
"Museo de la Ciudad de Murcia"	1	4
The public libraries in Alicante	1	4
Fernando de Loaces library (Alicante)	1	2
Lorca Council Archives (Murcia)	1	1
Cieza public library (Murcia)	1	2
Luis Vives university library (Univ. of Murcia)	1	4
Puente Tocinos Public library (Murcia)	1	4
La Opinión (regional newspaper inf.centre)	1	2
Pilar Barnés Public Library (Lorca-Murcia)	1	4
"Visit to the new university library of Alicante"	1	3
"Visit to the periodicals library at the Economics Faculty" (Murcia University)	1	4
Central Archive at Alicante University	1	3
Bellas Artes Museum (Murcia)	1	4
Informajoven (Murcia)	1	4
Salzillo Museum (Murcia)	1	4
Sivasa Museum (Cieza- Murcia)	1	3
Science and Water Museum (Murcia)	1	2
"Biblioteca Nacional" (Madrid)	1	3
University Library: Education (Murcia)	1	4

Academic year 2000-2001 *virtual* visits

TITLES	GROUPS	Number of components
The British Museum (London)	5	1 person in 4 of them, 3 people in one
Whitby Museum (Britain)	1	1
Snite Museum of Art (USA)	1	2
Museum of Advertising and Packaging (Gloucester- Britain)	1	4
The Natural History Museum (London)	1	2
Leonardo Museum (Museum of Science- Boston- USA)	1	1
Franklin Museum (USA)	1	1
The National Gallery — London	1	4
MLA La Jolla (California)	1	2
The Auckland Art Gallery (New Zealand)	1	2
Museum of London services	1	1
Beckford's Tower and Museum (Britain)	1	1
Yorkshire: What to do guide (Britain)	1	1
Sheffield Bus Museum (Britain)	1	3
Bramah Tea and Coffee Museum (Britain)	1	4
Geffrye Museum (Britain)	1	2
The Toy and Miniature Museum of Kansas City	1	1

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Academic year 2001-2002 *virtual* visits

TITLES	GROUPS	Number of components
MoMA (Metropolitan Museum of Arts- N.Y.)	4	2, 2, 3, 3
The Natural History Museum (London)	4	2 , 3, 2, 1
Leeds Art Collection Fund (Leeds)	1	2
National Museum of Women in the Arts (Washington- US)	1	3
The Scientific Museum (Spain)	1	1
the Museum of Science (Boston, US)	1	2
Manchester Museum of Science and Industry	1	2
Guggenheim Museum in New York	1	3
American Sport Museum and Archives	1	3
Beatles Museum (Germany)	1	2
National Building Museum (Washington D.C.)	1	3
Maritime Museum of British Columbia (G.B.)	1	2
The Museum of Fine Arts (Boston)	1	1
The Discovery Museum (Mass., US)	1	1
National Gallery of London	1	3
LACMA (Los Angeles Metropolitan Museum)	1	2

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Volume 2, Number 1, 2002

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Scheu-Lottgen, U.D. & Hernández-Campoy, J.M. (1998). An analysis of sociocultural miscommunication: English, Spanish and German. *International Journal of Intercultural Relations* (IJIR), vol. 22:4, 375-394.

Hilferty, J. Valenzuela-Manzanares, J. & Villarroya, O. (1998). Paradox Lost. *Cognitive Linguistics*, 9:2, 175-188.

Book:

Monroy, R. (1998). *Sistemas de transcripción fonética del inglés. Teoría y textos.* Granada: Grupo Editorial Universitario.

Calvo, C. & J.J. Weber (1998). *The literature workbook*. London: Routledge.

Sánchez, A., Sarmiento, R. Cantos, P. & Simón, J. (1995). *CUMBRE. Corpus lingüístico del español contemporáneo: fundamentos, metodología y análisis*. Madrid: SGEL.

Edited book:

Barcelona, A. (Ed.) (2000). *Metaphor and metonymy at the crossroads: A cognitive perspective.* Berlin, New York: Mouton de Gruyter.

Pujante, A.L. & Gregor, K. (Eds.)(1996). *Teatro clásico en traducción: Texto, representación, recepción*. Murcia. Universidad de Murcia.

Book chapter:

Gregor, K. (1996). Unhappy Families: Ideology and English Domestic Life. In R. González (Ed.). *Culture and power: institutions* (pp. 69-78). Barcelona: Promociones y Publicaciones Universitarias.

Proceedings:

Conde-Silvestre, J.C. (2000). Variación estilística e isotopía textual en el poema anglosajón *The Ruin*. In *Selected papers in Language, Literature and Culture. Proceedings of the 17th International Conference of AEDEAN*, 321-25.

Martínez-Lorente, J. & Pujante, A.L. (2000). Mundos diatópicos y narrativa utópica: modelo social y conflicto humano en *We, Brave New World* y *1984*. In *Selected papers in language, literature and culture. Proceedings of the 17th International Conference of AEDEAN*, 383-87.

Doctoral Dissertation.

Walton, D. (1997). *Mail bondage. Sentencing Wilde between the sheets: An epestemology of the epistolary (an architectonic rhapsody)*. Unpublished Doctoral Dissertation, University of Murcia, Spain.

Cantos-Gomez, P. (1995). *Lexical disambiguation based on standard dictionary definitions and corpus-extracted knowledge*. Unpublished Master Dissertation. University of Essex, Colchester, United Kingdom.

Book Review:

Hernández-Campoy, J.M. (2000). Review of C. Silva-Corvalán (Ed.) (1995) *Spanish in four continents: Studies in language contact and bilingualism*. Washington, DC: Georgetown University Press. In *International Journal of Applied Linguistics* (InJAL), vol. 10.1, 141-145.

Technical Report:

Edwards, V. K., Trudgill, P. J. & Weltens, B. (1984). *The grammar of English dialects. A survey of research*. A Report to the ESRC Education and Human Development Committee. London: Economic and Social Research Council.

Conference paper:

Gregor, K. (2000). *The torch and the marriage bed, or getting a grip on Cuchulain: The politics of Yeats's On Baile's Strand.* Paper given at ESSE 5, University of Helsinki, Finland, August.

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Include the appendices starting on a separate page following the list of references. Each appendix should be labelled with numbers or letters and titled. If only one appendix is used, no identifying letter or number is required.

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Please add a final page (not included in the word count) with the following information:

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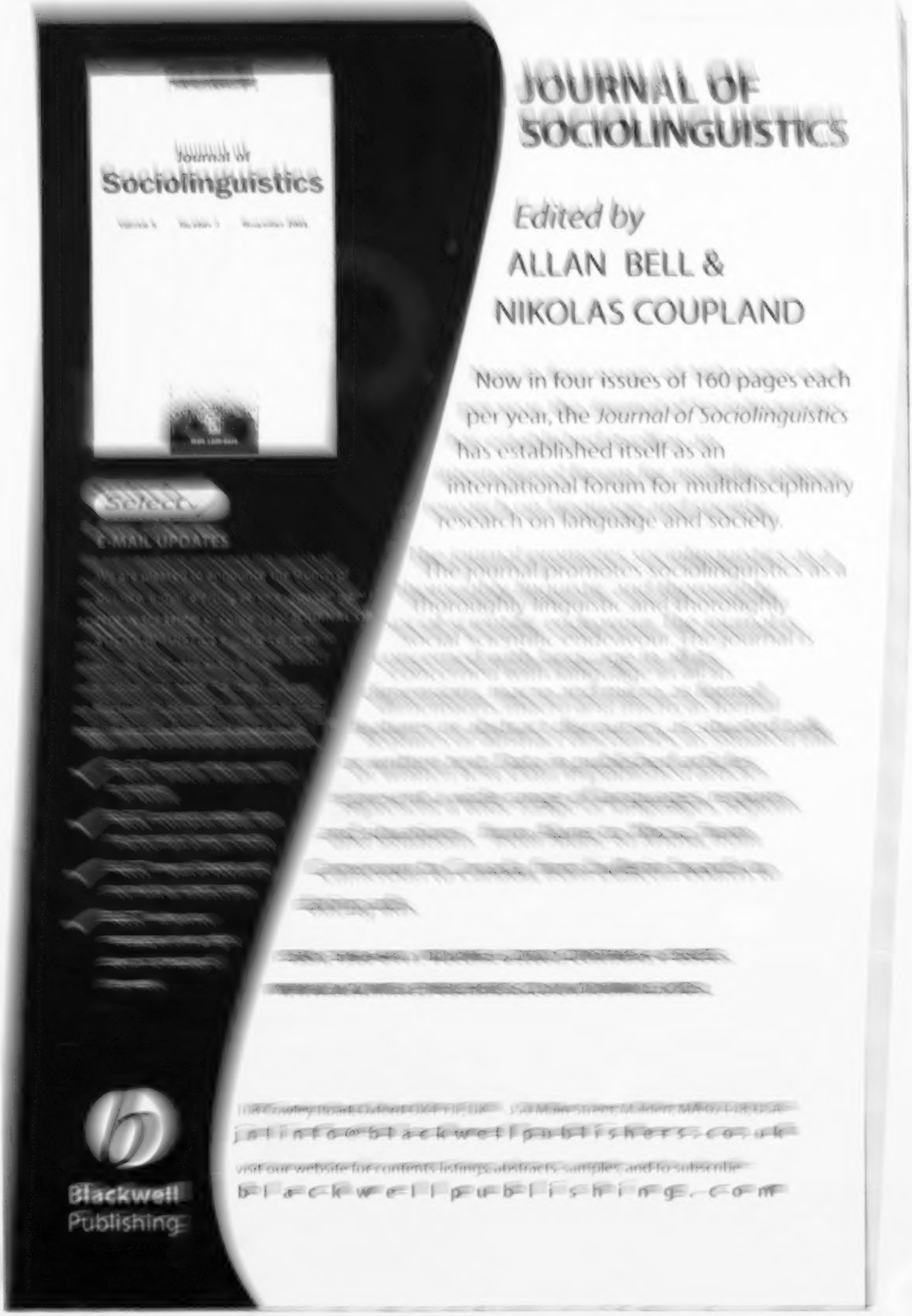
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